BUS Transportation

MAY

1956 • 50 CENTS

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School Buses in Alabama — p. 32

Doing a Better Selling Job — p. 42

Imagineering...

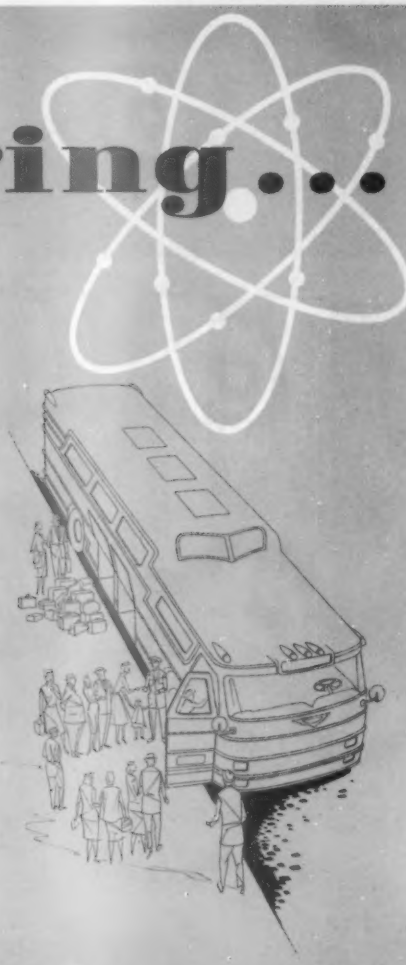
EVERY coach on the highway today is a better coach because of Flxible leadership, for in each of them you'll recognize one or more familiar Flxible firsts.

This is the result of Flxible *imagineering*—the daring to explore new concepts and the ability to reduce them to practicality.

IN TODAY'S trend-shaping Flxiliners you'll find—as profit conscious operators across the country *already have found*—a whole new set of totally new firsts that are destined in the next decade to become industry standards.

They are aimed at a single objective—to win back your absentee passengers through new concepts of styling, comfort and luxury . . . including riding qualities that equal those of even the finest automobiles and surpass most.

WE THINK you'll agree, once you've test-ridden one of these superb coaches . . . and when you note how *passengers* are standing in line in stations from coast to coast to ride them . . . that this truly is the coach of tomorrow, *today*—and the best friend any revenue-conscious operator can have.



THE FLXIBLE COMPANY • LOUDONVILLE, OHIO, U.S.A.

Builders of the Flxiliner Champions...the Coaches People Like to Ride

REYCO® *Engineered* BRAKE DRUMS

Just like school days pursued the **three R's,** efficient fleet operations are seeking the **three S's** . . . SAFETY, SERVICE and SAVINGS.

REYCO BRAKE DRUMS through sound engineering and basically better metal provide the ultimate in all three of these desired qualities.

No Brake Can Be Better Than the Brake Drum that Backs it up.

In fact, REYCO adds a **fourth S** that is the sum total of all the others . . . **the S of SATISFACTION.** Give Reyco engineering a chance to prove that it can solve all the brake drum problems in your fleet!

SALES & SERVICE NATIONWIDE!

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Articles in Bus Transportation are listed in an index made available on request at the close of each year.

BUS Transportation

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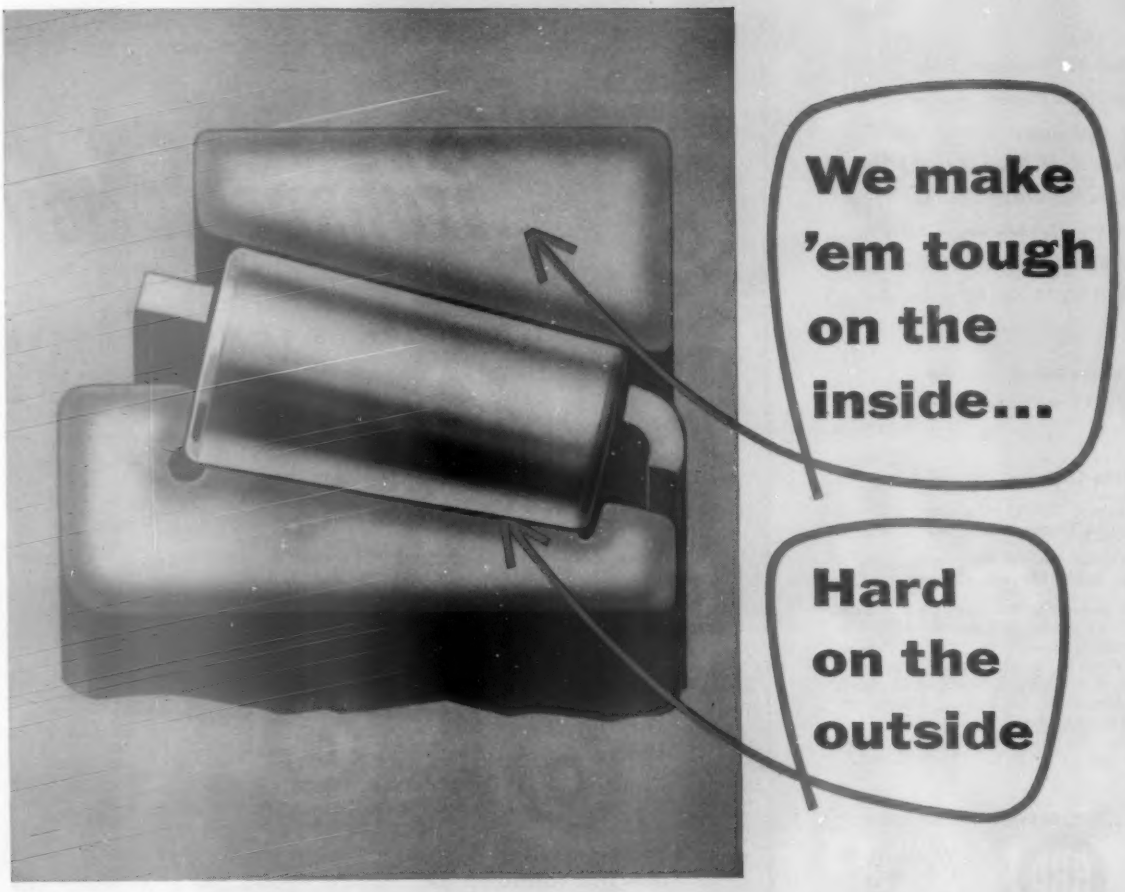
Next Month . . .

The 31st Annual Maintenance Number will be coming your way, packed with fact-filled stories on what progressive bus shops throughout the country are doing to get more production at less cost. We can guarantee there'll be something in it for your operation . . . so don't miss our big June issue.

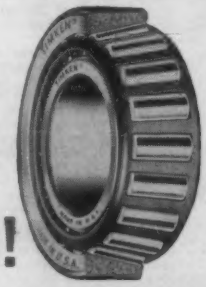


(Another reason why TIMKEN® bearings are first choice with bus manufacturers)

STEEL is the heart of a bearing. We make Timken® tapered roller bearings from the finest bearing steel ever developed. We make the steel ourselves—America's only bearing manufacturer that does. Then we case-carburize Timken bearing rollers and races to give them a tough shock-resistant core under a hard wear-resistant surface. These are the reasons Timken bearings have unequalled wear-resistance—can take the shock of rugged use.

Only Timken bearings give you all these advantages: 1) advanced design, 2) special-analysis Timken fine alloy steels, 3) rigidly controlled quality, 4) precision manufacture. That's why Timken bearings are number one choice with the men who *make* buses. So follow the lead of the manufacturers, make certain that the replacement bearings you buy are Timken bearings. And write now for your free copy of "Timken Tapered Roller Bearings—their care and maintenance." Write Dept. TB-5, The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

SINCE THEY'RE BEST WHEN THE BUS IS NEW, THEY'RE BEST FOR REPLACEMENT, TOO!



TIMKEN

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TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃
BEARING TAKES RADIAL ⊂⊃ AND THRUST →⊂⊃← LOADS OR ANY COMBINATION →⊂⊃←

Want to save a hatful of money?

It's easy with Goodyear's Fleet Battery Maintenance Plan

Here's a plan that's simplicity itself to follow—and free for the asking.

Sound good? It's great — as a growing number of fleet operators around the country will tell you.

This plan is called the Goodyear Fleet Battery Maintenance Plan and it keeps a constant check on the No. 1 battery killer — *improper voltage regulation* — the only way it can be done.

At each watering, batteries are load-tested with the Goodyear All-Purpose Tester (above) for state of charge — and the findings are recorded on a Fleet Battery Record Card—one for each battery.

Whenever findings go above or below the stripe you see on the Record Card, your maintenance man knows voltage is too high or too low and needs prompt adjustment.

By spending less than two minutes a week per battery, you get longer battery life, longer electrical system service—and fewer road delays.

And the savings continue to grow when you use this plan with Goodyear Heavy-Duty Truck and Bus or Diesel-type batteries. For the full story send in the coupon below to:

Goodyear, Battery Department, Akron 16, Ohio

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THE GREATEST NAME IN RUBBER

SEND FOR FREE BOOKLET TODAY!

THE GOODYEAR TIRE & RUBBER COMPANY, INC.
Dept. Q-7910, Akron 16, Ohio

Please send me a copy of the Goodyear Fleet Battery Maintenance Manual.

Name.....

Firm.....

Street Address.....

City.....Zone.....State.....

Number of trucks in fleet.....

We think you'll like THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

"Marfak has kept our maintenance costs low for 24 years—"

Knoxville Transit Lines, Knoxville, Tennessee

"WE started using *Texaco Marfak* with our first bus, back in 1931," says this long-time Texaco user, "and we're still using it 100 per cent on all 93 of our buses today. Our parts replacements have been very few and our maintenance costs very low."

Texaco Marfak is the famous chassis lubricant that *stays put*—doesn't jar or squeeze out, gives extra hundreds of miles of protection against wear and rust.

For wheel bearings, *Texaco Marfak Heavy Duty* is Knoxville's choice. It seals out moisture and dirt,

TUNE IN:
TEXACO STAR THEATER
starring
JIMMY DURANTE
on television . . .
Saturday nights, NBC.

TEXACO

seals itself in—assuring safer braking and extra thousands of miles of bearing life. No seasonal change is necessary.

MORE THAN 625 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

For heavy duty gasoline and diesel engines, use *Texaco D 303 Motor Oil HD.* It is fully detergent and dispersive—especially refined and processed to assure extreme engine cleanliness for full-power performance, low maintenance costs and low fuel consumption.

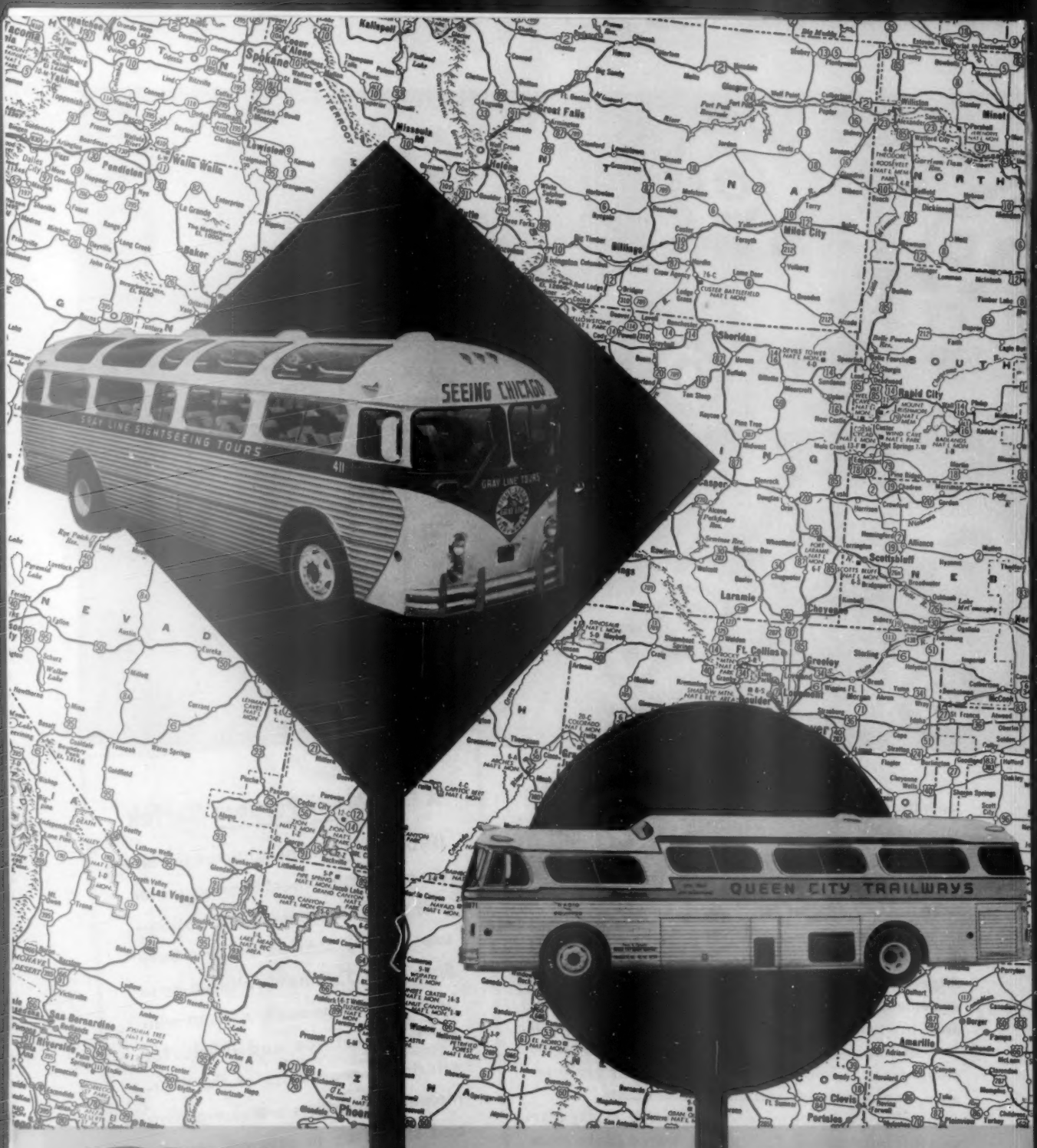
In transmissions and differentials, *Texaco Universal Gear Lubricant EP* assures smoother performance, minimum wear and maintenance costs.

A Texaco Lubrication Engineer will gladly give you full information. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write: The Texas Company, 135 East 42nd Street, New York 17, N. Y.

A New Multi-Purpose Marfak

If you want just one lubricant to handle all chassis, wheel bearing, water pump and other grease lubrication—use *Texaco Marfak Heavy Duty Special 2.* This new, lithium-base lubricant pumps easily even at winter temperatures and lubricates effectively regardless of the thermometer. It resists water washing and stands up in severest service.

Lubricants and Fuels
FOR THE BUS INDUSTRY



AKRON—Motor Rim Manufacturers Co.
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ALBUQUERQUE—Wheels & Brakes, Inc.
ATLANTA—John A. Harris & Son, Inc.
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DAVENPORT—Stone Wheel & Rim Co.
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DENVER—Quinn & McGill Motor Supply Co.
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DETROIT—H. & H. Wheel Service, Inc.
EVANSVILLE—Auto Wheel & Rim Service Co. Inc.

FARGO—Wheel Service Company
FORT WAYNE—Wheel & Rim Sales Co.
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LOUISVILLE—Auto Wheel & Rim Service
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NEWARK—Automotive Safety Inc.
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Budd Wheels . . .
Best for Buses . . .
(our customers tell us so!)

Quality-minded and cost-conscious bus manufacturers specify Budd wheels for their fleets.

How do we know? Our customers tell us so . . . customers who have used Budd wheels under all road conditions, customers who have enjoyed years and years of safe, economical, dependable wheel service.

Recently, Mr. H. R. Fouss, General Manager of C. D. Beck & Company, Sidney, Ohio, wrote to tell us that Budd wheels have been specified as standard equipment on the new "Semi" deck and half coach shown below.

And Mr. Charles F. Koors, Manager of Sales Promotion for the Crown Coach Corporation, Los Angeles, California, wrote that "only the finest components—such as Budd Wheels—were used" on the Super Coach Glasstop Sightseer, shown far left.

Buses are built for rugged duty; so are Budd wheels.
Buses are built to perform safely, smoothly . . . over any roads.
So are Budd wheels.
Buses are built to win, and hold, customer confidence.
So are Budd wheels. The Budd Company, Detroit 15, Mich.

Budd

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NEW YORK—Wheels, Incorporated
OKLAHOMA CITY—Southwest Wheel, Inc
OMAHA—Morgan Wheel & Equipment Co., Inc.
PEORIA—Peoria Wheel & Rim Co.
PHILADELPHIA—Kay Wheel Sales Co.
PHILADELPHIA—Thomas Wheel & Rim Co., Inc
PITTSBURGH—Wheel & Rim Sales Co.
PORTLAND—Six Robblees', Inc.
PROVIDENCE—New England Wheel & Rim Company
RALEIGH—Carolina Rim & Wheel Co.
RICHMOND—Dixie Wheel Co., Inc.
ROCHESTER—Frey, the Wheelmen, Inc.
SALT LAKE CITY—Henderson Rim & Wheel Service
SAN ANTONIO—Southwest Wheel & Equipment Co.
SAN FRANCISCO—Wheel Industries, Inc.
SEATTLE—Six Robblees', Inc.
SOUTH BEND—Wire & Disc Wheel Sales & Service
SPOKANE—Bearing & Rim Supply Co.
SPRINGFIELD, ILL.—Illinois Wheel & Brake Co.
SPRINGFIELD, MO.—Borbein, Young & Co.
ST. LOUIS—Borbein, Young & Co.
ST. PAUL—Wheel Service Co.
SYRACUSE—Wheels, Incorporated
TACOMA—Six Robblees', Inc.
TOLEDO—Wheel & Rim Sales Co.
WICHITA—Borbein, Young & Co.
WINSTON-SALEM—United-Automotive Service

EXPORT
CLEVELAND—C. O. Brandes, Inc.

CANADA
CALGARY—Mutual Supplies, Ltd.
EDMONTON—Alberta Wheel Distributors, Ltd.
MONTREAL—Auto Wheels & Supplies, Ltd.
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- Rattle-free Weather-tight Fit
- Streamlined Construction

Panoramic picture windows by Edwards on the great new fleet of Scenicruisers open up a new era in scenic enjoyment for passengers. However, regardless of the type of bus or service requirement, there's an Edwards Sash that meets exactly — and economically — every operating and service requirement. That's why leading bus builders standardize on Edwards Sash and profit-minded operators specify it. Write us today for complete information.

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SPANNING AMERICA...
With more than 600 Scenicruisers in service, Greyhound Lines now have these dual-level luxury buses on major routes throughout the 48 states.

The Eyes of Transportation

MIDLAND'S Tractor-Trailer Braking System Meets LATEST Regulations ... *AND THEN SOME!*

● Midland's tractor-trailer braking system meets all the latest safety regulations and gives you EXTRA, important benefits:

1. Tractor protection with the Midland system is *AUTOMATIC*, so important in split-second emergencies.
2. Midland valves are large-capacity valves, giving you faster, more positive action.
3. Midland provides a *combination* manual and automatic dash control valve for instantaneous application and release of trailer brakes.
4. Midland eliminates manual shut-off cocks.

AND, for the ultimate in braking protection, Midland offers you its new axle-by-axle system.

When you order new Tractor-trailer equipment, specify Midland Power Brakes for extra quality performance, more positive protection. Make it Midland, too, when replacing or modernizing the braking system on your present equipment. Your nearest Midland distributor is anxious to serve you. Just give him a call.

MIDLAND GIVES YOU *POSITIVE PROTECTION PLUS!*

● On Midland-equipped units, if trailer breaks away from tractor, Buzzer sounds . . . instant-acting Reservoir Check Valve automatically seals air supply, giving tractor sufficient reserve . . . Break-Away Valve permits tractor brakes to be applied to bring tractor to safe stop . . . trailer braking system automatically applies emergency feature to stop trailer!

● The new Midland Emergency Relay Valve has dual compensating controls. One operates the relay section to supply air to the brake chambers in proportion to service control line air pressure.

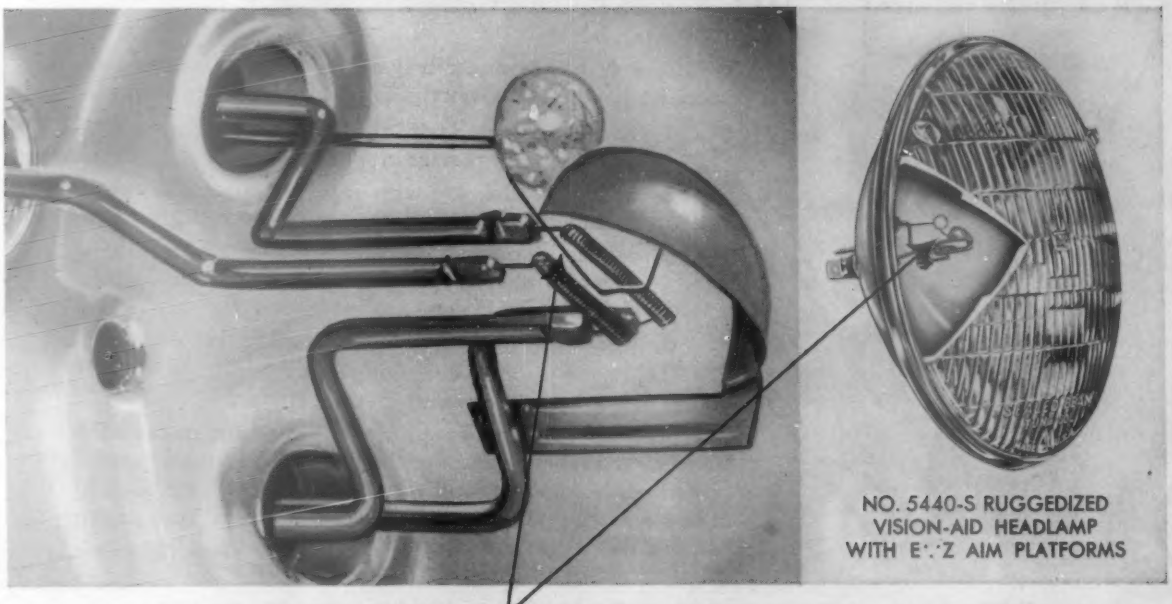
The other operates the emergency section which insures you against total loss of air and automatically applies trailer brakes.

● Midland Air Compressors feature patented automatic inlet valves built into the cylinder head for greater efficiency, cleaner air, cooler operation—*extra safety*. Available in models 7.4 and 12 capacities, these compressors provide ample reserve braking power for the worst traffic emergencies, require a minimum of maintenance.

THE MIDLAND STEEL PRODUCTS CO.
6660 MT. ELLIOTT AVE. • DETROIT 11, MICHIGAN
Export Department: 38 Pearl St., New York, N. Y.

Those Who Know
Power Brakes
CHOOSE MIDLAND!

TUNG-SOL VISION-AID HEADLAMP *Ruggedized* FOR TRUCK SERVICE



NO. 5440-S RUGGEDIZED
VISION-AID HEADLAMP
WITH E·Z AIM PLATFORMS

New "Filament Anchor" protects against premature burnouts

This is the headlamp with the nationwide reputation for standing up under toughest service conditions . . . for reducing headlamp replacement costs . . . and for keeping drivers out of trouble on the road because of faulty lighting.

The "filament anchor" . . . an exclusive Tung-Sol safety feature . . . provides a ruggedness that lengthens lamp life. The "anchor" keeps the top filament from sagging and prevents shorts and premature burnouts. The entire filament structure is designed to absorb shock and vibration. It safeguards the filaments and maintains accurate beam focus under all operating conditions.

Tung-Sol No. 5440-S Vision-Aid Headlamps embody all the newest principles of headlamp engineering. They have the highest candlepower ever built into a production headlamp. Their improved passing beam has the greatest range, focussed for clear illumination of the vital right lane and road shoulder. And the shielded low beam filament eliminates glare-back in fog, rain and snow.

Other lamps in the complete Tung-Sol truck line have been ruggedized where service conditions indicate the need for extra durability. Standardize on Tung-Sol lamps for safety, economy and dependable service.

TUNG-SOL ELECTRIC INC., Newark 4, N. J.

Sales Offices: Atlanta, Columbus, Culver City, Dallas, Denver, Detroit, Melrose Park (Ill.), Newark, Philadelphia, Seattle. Canada: Montreal.

TUNG-SOL

NO. 5440-S RUGGEDIZED
VISION-AID HEADLAMPS
WITH E·Z AIM PLATFORMS

NEW WAYNE *SUPERAMIC*

The look of the future in school transportation . . . the new Wayne Superamic School Coach . . . engineered and *visioneered* for passenger protection. Huge Superamic wrap-around windshield (53% larger than ordinary) with Low-Dip Corners . . . Visiports for lower angle vision at front corners . . . largest driver's window . . . widest front . . . overhead enclosed door controls . . . Ram-Jet Air Intakes on front for better ventilation . . . dual defrosting . . . pace-setting interior styling . . . strongest, heaviest frame and paneling, etc. Contact your Wayne Distributor now or write to WAYNE WORKS, INC., RICHMOND, INDIANA, U. S. A.

Wayne

TREND-MAKER OF THE SCHOOL COACHES

In the City of Seven Hills — 5.1 miles per gallon of diesel fuel!

Cities Service Diesel Fuel and Gasolene give remarkable results for Worcester Bus Company, Inc., Worcester, Mass.

Recent maintenance reports covering the 161 buses of Worcester Bus Company reveal outstanding results since the firm's switch to Cities Service Gasolene and Diesel Fuel.

Despite the severity of Worcester's famed seven hills, gasolene units are getting 3.2 miles per gallon and diesels are averaging 5.1 miles per gallon!

Meanwhile, Worcester reports it has doubled the period between oil changes and substantially lengthened overhaul periods using Cities Service C-300 Motor Oil. And still greater improvement is expected in the months to come!

All of this would be unusual under any condition, but when you consider that Worcester's buses must average 8 miles per hour against a national city average of 12 . . . and when you consider that its biggest loads are carried uphill (more people ride up than down) . . . the story becomes more than just unusual. It becomes worthy of study by any fleet operator . . . for what Cities Service fuels and motor oil have done for Worcester, they can do for your operation.

A Cities Service Lubrication Engineer will be happy to supply all the facts. Or, if you prefer, write Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

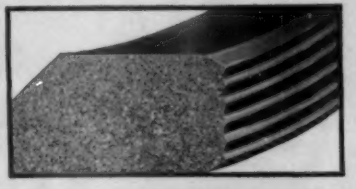
Maintenance of 161 Buses has been simplified through the use of Cities Service Gasolene, Diesel Fuel, and C-300 Motor Oil. Period between oil changes has been doubled, overhaul period substantially lengthened.

Rolling Up 5,000,000 Miles a year, Worcester Buses carry 21,000,000 passengers to and from the city and its suburbs. Biggest loads must be carried up the city's seven hills, since more people ride up than down.

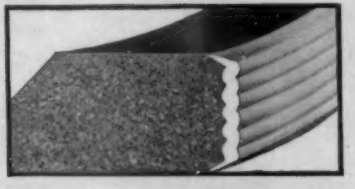
Sealed Power has a way with Chrome not duplicated by others

CHROME

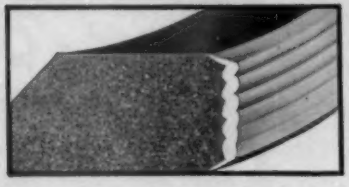
Here's how Sealed Power engineers have licked the heat, friction, abrasion, and corrosion caused by higher engine speeds in modern motors.



THE CASTING . . . For better bonding of the chrome face, Sealed Power developed a special chrome-alloy cast iron. Oil-carrying grooves are machined into the face of the casting for better lubrication.



THE PLATING . . . The chrome face is then electro-plated on the casting, to a thickness of not less than .004". Note that the oil-carrying grooves are still apparent. They are an important factor in the ring's success.



THE LAPPING . . . After plating, the ring is factory-lapped to a light-tight finish, which is equivalent to 300 to 500 miles of actual road wear. This expert lapping is the reason for the ring's quick seating.

This exclusive Sealed Power chrome treatment for top compression rings can mean dollars to fleet owners—in longer ring life, in better oil control, and in added power. These rings are included in every Sealed Power KromeX Ring Set. Be sure to install Sealed Power KromeX Sets when you re-ring!

GET IT FROM YOUR JOBBER

SEALED POWER CORPORATION · MUSKEGON, MICHIGAN

Sealed Power Piston Rings

BEST FOR RE-RING! BEST FOR RE-BORE!

Sealed Power Motor Parts—The Heart of the Engine · Rings, Pistons, Pins, Sleeves, Valves, Water Pumps

The only spark plug you can afford is the best spark plug that's made!

As a fleet operator, you know that the efficiency of any engine hinges on its weakest spark plug. The wear on a cylinder wall and piston, through loss of lubricant washed away by unburned fuel, adds up to expensive maintenance in a short period. This can result from using a spark plug that is ALMOST right for the engine.

The best spark plug made is the only right spark plug for your engine. If you're not already using the Auto-Lite Transport Spark Plug, it will pay you to examine this special plug and put it on test in your fleet. You'll find it's ignition-engineered to give top performance under all kinds of driving in all kinds of service.

You'll find, too, that Auto-Lite Transport Spark Plugs are winning preference for top performance under the toughest kind of comparative tests.

Here is your spark plug—ignition-engineered by Auto-Lite specifically for top performance where performance pays off. It's the RIGHT spark plug for your fleet.

AUTO-LITE SERVICE TIPS

KEEP IT CLEAN WHEN REMOVING SPARK PLUGS FOR A COMPRESSION TEST

Often a piece of hard carbon dropping from a spark plug, as it breaks away from the head during plug removal, will lodge under the exhaust valve, holding the valve open during the compression test. This will result in a low reading. To avoid this here's how to remove plugs correctly to be sure of *accurate* compression readings:

1. **Remove wires and clean recesses around each plug with air blast.**
2. **Unscrew each plug about one to two turns.**
3. **Tighten plugs again, replace wires, start engine and race to blow any loose particles from combustion chamber.**
4. **Stop the engine, remove plugs. Now, make your compression test.**

HEAVIER INSULATOR with greater resistance to hi-voltage and to breakage.

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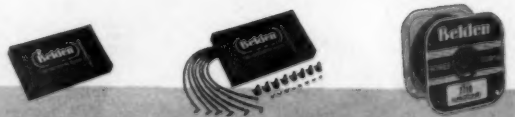

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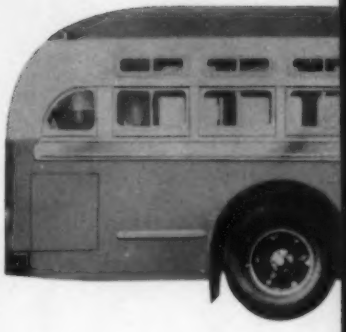

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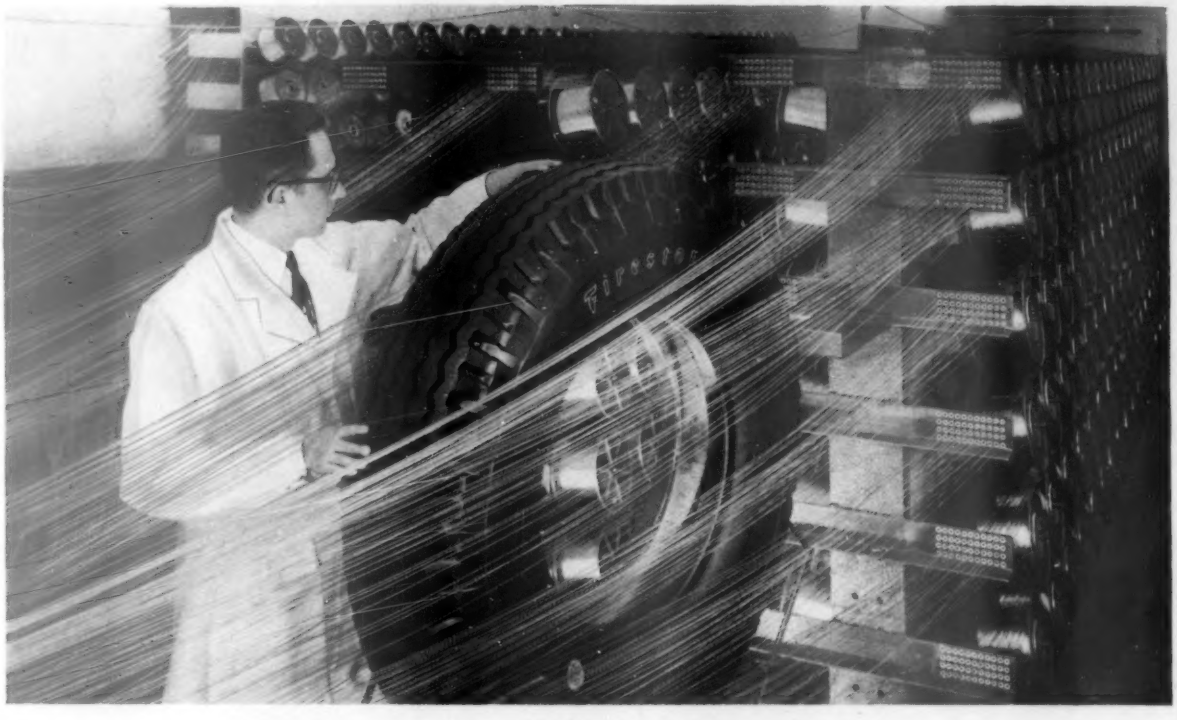

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Firestone steel *Wire Cord* bus tires are not only the safest bus tires ever built, but they also give a tremendous increase in mileage. Operators report as high as 300,000 miles on the original tread before retreading. The Firestone steel *Wire Cord* tire body is so strong that it stands up for more retreads than any other tire, which of course means thousands of additional low-cost bus miles. It is your answer for lower operating costs.

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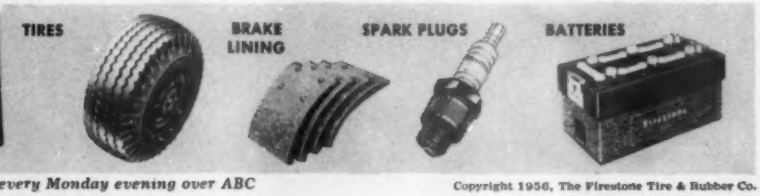

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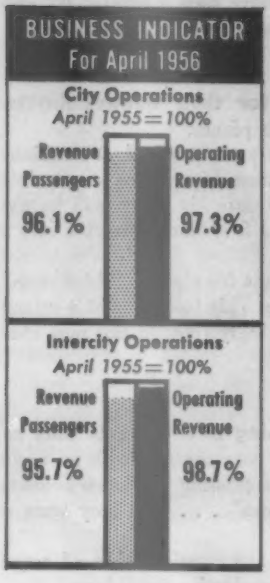
Top Topics

BUS Transportation



The intercity bus industry is mourning the death of Jack Garrett Scott, who passed away on May 2 after a lingering illness.

For almost twelve years he rendered invaluable service as general counsel to the National Association of Motor Bus Operators, except for the period 1952-1953, when he had the honor of serving as under secretary of commerce.

He is survived by his widow, Emma Scott Moore, by his mother, his son, a sister, a brother and five grandchildren.

Transit riding in California was down 8.8 per cent in 1955, but the more than half billion passengers carried by 16 lines reporting to the PUC accounted for a passenger revenue drop of only four per cent.

Strikes were an important factor, with no less than six transit lines hit by walkouts during 1955. And of course there's always the auto . . . 963,342 more cars crossed the San Francisco-Oakland Bay Bridge last year than did during 1954, while the Golden Gate bridge reported an increase of 1,252,915 autos. These figures represent increases of 3.6 and 11.1 per cent, respectively.

Drivers in charcoal gray will contrast with pink bus interiors on Canada's Edmonton (Alta.) Transit System.

This unusual extension of color scheme harmony resulted in the company placing an order for 320 charcoal gray uniforms to replace the old—and clashing—blue serge uniforms formerly worn by drivers.

Louisiana's PSC has no control over Shreveport Railways Co., under a ruling by the state attorney general.

The opinion stated that the company "had converted entirely to buses . . . and does not at this time have any streetcars operating on rails, and is therefore no longer a street railroad, although a common carrier."

The Commission had regulated the Shreveport firm under the constitutional provision giving it authority over street railroads . . . under the opinion, regulation services must now be taken over by the city of Shreveport.

The state of Maryland has returned Baltimore Transit Co. to its private owners after seizing it early in March to end a 39-day strike. With the return came a warning from Gov. McKeldin that in disputes between Maryland utilities and their employees "the state will act when necessary."

Almost immediately after resuming control BTC went before the PSC to request continuance of the 20-cent fare instituted by the state, as well as the increase in children's and students' fares.

The contract agreed upon by BTC and its employees provides a 20-cent hourly increase, spread over a two and a half year contract.

A five-cent fare on Main Street, Memphis, has been proposed by the chairman of that city's Transit Study Committee, who pointed out that such a bus, operating during shopping hours is now being used in Houston and San Francisco.

A Memphis Street Railway official said that the company would wait for completion of studies on the subject before taking a stand one way or the other.

Intercity bus lines are seeking a six per cent increase in fares. This was disclosed by a spokesman for the National Bus Traffic Association during the ICC

Continued on next page

Top Topics (Continued)

hearing on the recent five per cent interstate railroad fare boost.

The hike would be effective on May 25 on most lines . . . slightly later on some. Meanwhile, it was also announced that the bus lines have filed a similar request, for intrastate travel, with some 35 state regulatory bodies.

Air coach travelers soon will be paying less for their budget flights. And they'll be flying faster schedules in more luxurious planes.

It's all part of the growing move in the air industry to lure budget-conscious travelers into the skies and out of buses, trains and steamships. Some responsible airline executives go so far as to predict that in the future air coach will be the standard method of air travel . . . with today's standard first class converted into a deluxe, premium fare service.

A move to watch: Pan American's as yet unofficial plans for a cheap "third class" fare, perhaps to be inaugurated in trans-oceanic service. This has brought a mixed reaction from other airline execs, some of whom sneeringly refer to this new idea as an unwelcome "steerage" class.

Despite employees' announced intentions of seeking 25 to 30 cents more an hour, the Cleveland Transit System has offered a three-year contract with no wage increase at all. Instead, CTS has proposed that certain existing employee benefits be reduced . . . called them "costly working conditions" . . . said they were a "burden on the transit rider."

But CTS didn't close the door. Officials said that any consideration of wage increases depended upon the union giving up these unproductive conditions.

They'll be off and running at Santa Anita on May 26—school buses, that is. The well-known race track will be the scene of the fourth annual Southern California School Bus Roadeo, which had drivers entered from 28 southern California school bus operators at the first of this month.

The northern part of the state will have a similar test of driving skill on May 19 at Contra Costa College. Of the two winners, the one with the highest score will be named state champion.

Tentative approval of express runs over the Indiana Turnpike has been given the Greyhound Corp. by the Interstate Commerce Commission, although the new highway won't be ready for traffic until later this year.

At the same time it approved the Indiana east-west run, the ICC also tentatively okayed Greyhound's use of the connecting link between the New Jersey and Pennsylvania turnpikes.

Community Motor Bus Co. may be operating illegally in Portsmouth, Va., according to a court complaint filed against the company by the city.

It came about when Portsmouth Transit Co., which holds the franchise to operate within the city, filed for increased fares, citing "illegal competition" by Community Motor Bus as one of the reasons the fare hike was necessary.

250 transit men turned out at Baltimore May 2-4 for a series of ATA regional and divisional conferences.

The keynote address was by American Transit Association President Roswell F. Thoma, who reaffirmed his faith that the men who operate transit can also shape its future. We'll have the full story and pictures in next month's issue.

BUS Transportation

Ride The Buses?

AN ARTICLE IN THIS ISSUE—"Is Intercity Selling as Well as it Can?"—makes pointed comment about one of the things in the intercity industry which is urgently in need of correction. Speaking broadly of the industry and not of individual companies, it states that the men who sell bus riding haven't sold it as a desirable mode of travel. Worse still, a vague social stigma has been permitted to become associated with bus riding. And this applies not only to intercity bus travel but, in a great big way, to transit riding also.

How do YOU travel?

While there are exceptions, the bus operating industry for the most part has not set a very good example to the riding public. When we travel on pleasure or business, how do we go. By plane, by pullman, by private automobile. Who ever heard of a bus man going to a bus convention by bus. And in our everyday business how do we go to the office or shop?

How do we go? What kind of transportation do we use? Well, a whopping big majority of us—two out of three, figures indicate—use private automobiles. True, some use of private automobile is dictated by necessity but a great deal of it appears to be dictated by preference. While we bewail the reduction in bus riding, the increased use of private automobiles, the growing traffic jams and, the growing indifference of the public to our services, we ourselves importantly contribute to the plight in which our industry finds itself.

Recently this magazine sent out a 12-question inquiry to a cross section of the bus industry—the object: **to find out how well the people of the bus industry patronize their own services.** Complete returns were received from companies with a total of 6,790 buses and with 18,538 employees on the payroll. Of these, 12,078 used their own automobiles and 6,122 used the buses of their own companies going to and from work. In all but a few instances, employees are given free passes. More than half of the companies responding to the survey supply free parking. In several instances, employee cars on the company parking lot greatly outnumbered the number of buses owned by the company. Where free parking is not provided, employees park where they can find space, either in public lots or at the curb where they contribute to the very problem the industry is trying desperately to combat. Moreover, they advertise the fact that even bus company employees who can ride free are not sold on their own product, and actually spend their own money rather than use it.

Set an example

One company which replied to our inquiry operates some forty buses and has 90 men on its payroll, every last one of whom comes to work in his own car. How can this management expect to sell the general public on its service when apparently it cannot give it away absolutely free to its own employees?

Those of us in the bus industry who, out of preference, elect to use some other means of transportation rather than the buses from which we earn a livelihood are much like a restaurant chef who goes out to lunch because he can't stand his own cooking. It strikes us that it is high time that all of us learn to like our own cooking and what's more try with might and main to induce others to cultivate a taste for it.

FRED A. OSSANNA ▶ president of Twin City Rapid Transit, has led the fight to see that TCRT gets its full share of rights and privileges. A relative newcomer to transit, he had already established himself as one of the nation's top legal minds. Many a foe in Minneapolis and St. Paul has learned to respect this facet of Ossanna when he met and bested them in one court action after another.

RAPID CONVERSION from rails to rubber played a vital role in the success of TCRT's new management team. This photo shows the evolution of vehicles from the old streetcar at right to the sleek PCC car, the trolley bus, and finally the modern diesel bus.

Twin City's Management Has

The Overall Picture At a Glance

WHEN NEW MANAGEMENT, headed by Fred A. Ossanna, took over at Twin City Rapid Transit, it proved right from the start that it couldn't be bluffed . . . would bet 'em to the hilt whenever it had 'em.

INCREASED PROFITS and an ever-improving financial position were the direct results of this fighting attitude by TCRT leaders. But in achieving this, conversion from rails to rubber played a key role. See page 28.

LONG RANGE PLANNING is the rule at TCRT. Above, management and labor plan a new garage. In the photo are Twin City-men Morgan, Ossanna, Seidel, Bolsted, Larrick and Anderson. This policy of working closely with labor has borne rich fruit at TCRT.

a Blue Chip on its Shoulder

AMONG SUCCESSFUL and admired transit companies in the United States today, Twin City Rapid Transit Co. of Minneapolis and St. Paul, Minn., is high on the list.

Much of that success began five years ago, when President Fred A. Ossanna and his new management team took over control of the operation. From the very first their task was a tough one, for no sooner had they taken over than Minnesotans from all walks of life sprang to the attack, charging that Ossanna and what they called "his crowd" were out to milk the company.

It seemed inconceivable to these critics that the new management was out to do a good job—but that was five years ago. Since then even the worst of the critics have had to admit that under Ossanna the new management group *has done* a good job—it has presented its twin communities with one of the most modern all-bus fleets in the country, and at the same time has vastly improved the financial position of the company.

The accomplishment of this task required the services of a management team that was a combination of newcomers and experienced operators.

At its head is Ossanna, considered one of the finest legal minds in the United States. As president, he's directly responsible for operating TCRT.

As vice-president and general manager, Benson M. "Barney" Larrick brought to TCRT the wealth of know-how which he'd gained as top operating man on various transit properties throughout the country. This, together with his wide acquaintanceship in the transit field, made him a natural for the job.

Dr. David Ellison, vice-president and medical director

of the firm, has also played an important part in TCRT affairs. He is directly responsible for the administration of the company's medical program, which is second to none. He also handles the company publication, with the assistance of Edmund Sansovini . . . and takes an active part in TCRT's "Operator of the Month" program.

Twin City's secretary-treasurer, James H. Towey, has been credited with a large share of the progress TCRT has made financially since the present management took over in 1951.

Elmer N. Olsen, as chairman of the board, brings to TCRT management the experience and judgment that made him one of the most successful businessmen in Minneapolis.

As the team leader, Ossanna showed from the start that he's a positive thinker who believes that transit and the institution which gave rise to it, the city, are not doomed to die. Although a newcomer in transit in 1951, he was already renowned as a battler in his legal, business and labor activities.

It didn't take him long to prove that he wouldn't back away from a fight as a transit man, either. In the face of criticism by the press and various official bodies, and amid dire predictions by city officials that the company would be in receivership in six months, Ossanna came out boldly and demanded that the company receive fair treatment. In the past, he said, the company had sometimes not bothered to demand all the rights to which, by law, it was entitled.

As one of his first steps, Ossanna decided that TCRT had too many vehicles on the streets for the amount of business they were getting. Poorly patronized service costing more than 60 cents per mile was bringing a return of 16 to 20 cents per mile. Despite the loss of 20 million riders in three years, TCRT was still operating the same number of miles in 1951 as it had been in 1948.

From all sides came arguments that the city council and the union would fight fiercely any move to curtail service. Management, not the council or the union, he said, should and must run the company. He was just new enough in the field to go against advice that might hamper someone more experienced—and he trimmed.

One of his first major trims was within the company itself, as he eliminated the entire checking department, which he felt not worth the $70,000 a year it cost.

Next he began cutting back on schedules. As anticipated, the city council howled with rage, and took court action to restrain him. Ossanna appealed and won, as the court held that the city's position actually involved confiscation of property without due process of law.

In the first three years he was in the saddle, Ossanna lopped off more than six and a half million vehicle miles. Also, numerous route and schedule changes were made, and the number of vehicles operated was reduced by more than 150

Ossanna then challenged the city again on an ordinance that cost TCRT $133 per trolley for licensing —as against $25 immediately after the war. He felt that former managements had been partially to blame for this, as they had set up a reserve account for these fees.

Again Ossanna won his fight. The ordinance was declared unconstitutional. The city appealed to the supreme court, which also ruled against the city and held the ordinance invalid. The reason was the same as before: it amounted to confiscation of property without due process of law.

DRIVERS ARE IMPORTANT people at TCRT, which sponsors an "Operator of the Month" contest. Above, the drivers' room.

Unfair taxes became the next objective in Ossanna's campaign. He particularly objected to personal property taxes which were charged against obsolete and depreciated property and equipment on the same basis as for property and equiment actually in use.

Once again an attack in the courts was planned. But two days before the case was to be tried the city backed down—TCRT received tax relief of $135,000 for the year 1951.

Ossanna and his management group didn't stop there, however. They fought for more relief on the same basis . . . so successfully that in 1952 they were able to report to the stockholders: "Your management was successful in securing a review by the various tax authorities and the valuations of both the company's real and personal property, which resulted in materially lowering the company's tax bill. Personal property tax reduction alone, applicable to 1952 operations, amounted to $214,971.04 under the previous year. In addition, a personal property tax decrease of $71,008, applicable to 1951 operation, was effected this year and such sum was credited to earned surplus.

"Our efforts will continue to obtain equitable lower adjustments in our tax expense. The decrease of $31,-045.29 in social security taxes results from a reduction in the number of employees on the company payroll."

Next, Ossanna trained his guns on the problem of fare increases, which were desperately needed if the company was to become a profitable operation.

Lesser men might have been satisfied with the tax relief already granted, but not Ossanna.

MECHANICS ARE IMPORTANT, TOO. And so they won't feel left out, maintenance contests are held for the men of the various garages in the system. Through awards like this, TCRT has helped reduce expenses in line with reduced riding and revenues.

He said he had no sympathy at all for an attitude which put TCRT in a position "apart from other utilities —for unlike other utilities, it is forced to render service at less than cost."

In this battle, too, Ossanna was victorious. From 1951 to the present TCRT has been successful in getting what it needs to meet its expenses. The most recent fare boost was won in the past several months, and helped meet the latest wage increase for TCRT employees.

Speaking of employees . . .

Ossanna also showed his mettle in the field of labor relations.

In the past, arbitration had heaped more expenses onto a company already operating at a deficit. Ossanna contended that arbitration was unnecessary . . . that logical talks conducted by the interested parties can do more to iron out differences than can any arbitrator.

He further argued that it was impractical to have an outside authority, with little or no knowledge of local conditions, stipulate what wages must be paid.

He was so persuasive that the union agreed to the elimination of the arbitration clause in its next contract. And to prove his point, there has not been a major dispute which hasn't been settled amicably since that time.

Although at first it objected strongly, the union also came to see that cutbacks in personnel were necessary, and for the most part has gone along with TCRT in its reduction of forces. To gain this kind of cooperation, Ossanna makes it a point to keep no secrets from union leaders. He discusses plans involving personnel with them, and will always see them and co-operate with them whenever they have anything involving the company they want to discuss with him.

Meanwhile, employee relations were not neglected, as an entirely new program was formulated by the new management.

One of the first steps taken was institution of an employee publication, "*The Windshield*," which helps keep employees informed on doings of the company and of each other. The magazine provides an effective tie between management and labor, but does not contain any company propaganda, in line with a promise made by Ossanna when the publication was conceived.

Another element of the employee relations program is the "Operator of the Month" program, under which the public names courteous and safe drivers. The winner each month is awarded a $50 government bond, and his picture is featured prominently in each of TCRT's buses.

Much of the credit for the "Operator of the Month" plan goes to VP and General Manager Barney Larrick.

Office and maintenance workers have a chance to reap awards, too. Under a suggestion plan, they can win up to $50 for the "suggestion of the month," and are assured of $10 if their suggestion is accepted at all.

Of course, award winners are highly publicized to other employees through the pages of "*The Windshield*."

Still another phase of the employee relations program is the insistence by management that its men have regular physical examinations. This, of course, falls under the direction of Dr. Ellison.

Employees can thus keep track of their health—something that's not done too often—and the company can

detect symptoms which would rule out someone in ill health from, let's say, a driver's job.

How about public relations? Considering the hard feeling against the Ossanna group when they first took over in 1951, the public's attitude toward TCRT is good.

In the beginning there were loud complaints about everything the company wanted to do. But once it was told the facts the public's attitude changed, so that it gave tacit approval to the course TCRT was steering.

Letters of complaint, formerly received by the hundreds, dwindled to the point where even complaints on fare increases were few. In fact, at a recent hearing not one letter of objection was received by the commission.

Partially responsible for this enviable position was TCRT's public relations program, instituted by Ossanna's son, Fred, Jr., several years back. While there is still much to be done in this field, it's undeniable that much has already been done.

The company has taken an active part in city and civil defense affairs . . . in National Safety Council programs . . . in short has become a model community member.

Tied in closely with its safety program is TCRT's battle against the high cost of claims. What with a doctor and a lawyer on the executive staff, the company has been able to reduce claims payments substantially.

What does all this mean in the colume where it really counts—the profit and loss column?

The answer to that is found in black figures in TCRT's financial statements. Following is the story of how that financial picture has improved, abetted by what was probably the most rapid conversion from rails to rubber in the history of the bus industry.

TWIN CITY MANAGEMENT is shown at a stockholders' meeting as they report to the company's shareholders on . . .

Conversion and Increased Profits

At Twin City Rapid Transit, financial progress has been steady since the present management took over in 1951.

That year, the company reported a loss of $301,255. However, the following year disputed personal property taxes for 1951, but payable in 1952, were settled for $71,008 less than the amount of the original assessment. Already the fight-to-win attitude of the new management was paying off!

The amount of the tax reduction was restored to earned surplus, and the reported net loss dropped accordingly to $230,247.

Meanwhile, the new group took decisive steps to . . .

- Eliminate hundreds of thousands of dollars in overtime.
- Reduce non-productive personnel to a minimum and retire old-age employees.
- Abandon losing lines and remove from service nonproductive equipment.
- Reduce tax obligations in every field it could.
- Cut down the company's debt by $830,000, and increase its cash and marketable securities.

Besides all this, though, something had to be done to increase revenue, especially after an 18-cent-an-hour, three-step wage increase for TCRT employees. To offset this, the company immediately petitioned for a flat 15-cent fare, but was turned down by the Minnesota Railroad and Warehouse Commission.

After appealing to the courts, TCRT finally got its increase in April, 1952, but by then deficits incurred during the time lag made it necessary to apply for another

increase in June, 1952. This was granted after lengthy hearings, and the fare was upped to 20 cents cash and six tokens for a dollar.

Twin City's hard fight paid off in 1952, when losses dwindled to $20,331, after provision for amortization of deferred abandonment losses amounting to $78,840. In other words, revenues amounted to $58,509 more than expenses in 1952 . . . and only because TCRT could write off abandonment losses was a red ink figure reported.

Those abandonment losses were the result of the rapid conversion from rails to rubber—a conversion which had begun under the old management but was greatly speeded up when the new management moved in.

The reason for the speed-up was purely economic. Rail lines were losing money . . . and with each succeeding cutback in rail service, the cost of operating the remaining trolleys became more prohibitive.

The new management recognized that ultimately all trolleys would have to go. Savings on bus operation would be at least ten cents per mile, and schedules would be much easier to maintain.

In its trolley heyday, the old company had operated 523 miles of track. By 1951 it was down to 409.99 miles. In the next three years trackage dropped to zero, and the era of the bus had begun in the Twin Cities.

There was a good reason—the best—for the decision to convert rapidly, as operating costs for trolleys zoomed astronomically once the conversion process started.

To point this up, here are some of the operating figures for conversion years:

In 1952 TCRT operated 14,959,559 car miles at a cost of $9,967,153, for a cost per car mile of 66.6 cents. For comparison purposes, buses operated 11,677,244 miles at a cost of $5,707,228—or 49 cents per bus mile. During that year trackage was reduced to 392 miles.

The following year TCRT eliminated another 120 miles of track and reduced correspondingly the number of trolleys operating. A total of 8,723,550 car miles was operated at a cost of $6,249,548, or 71.6 cents a car mile.

In the first six months of 1954, the final period of trolley operation, cost per car mile was a tremendous 99.6 cents.

Correspondingly, buses carried the bulk of the passengers, operating 17,342,901 miles in 1953 at a cost of 52.5 cents per bus mile. In 1954 buses operated 23,787,640 miles at a cost of 55 cents per bus mile. However, this included higher depreciation because of the new buses purchased . . . and it also included wage increases for TCRT employees.

In 1955, the first year of all-bus operation, TCRT's cost per bus mile was 56.7 cents.

The important part that conversion played in the company's financial picture is apparent in the year-by-year reports issued by TCRT.

In 1953, for example, a net income of $223,222 was on the books . . . actually, $601,769 before the abandonment write-off made possible by conversion.

Income before taxes hit a million and a quarter dollars, from which was deducted once again the special charge for deferred abandonment loss amortization, and another charge equivalent to income taxes for losses on property abandoned.

Bonded indebtedness of TCRT was reduced by $400,000 . . . a balance of$349,861 due on streetcars purchased from 1946 to 1949 was paid off, and these same trolleys were disposed of during the year. And finally, the company paid out more than a million and a half dollars in down payments, monthly installments and interest on 340 new 51-passenger diesel buses. All in all, $5 million was expended on new buses during 1953.

On top of these expenditures, $750,000 was provided for garages, equipment and other additions. A large part was used to convert streetcar barns at the Nicollet and North Side Divisions for storage and maintenance of motor coaches.

Another financial bright spot of 1953—and again a direct result of conversion—was the sale of TCRT's power plant to Northern States Power Co. for $1,500,000, with possession to be taken at the conclusion of conversion. This was the same plant that outside "experts" said would prove to be a white elephant and was "completely worthless."

Twin City held its own in 1954, when the system totalled up a net income of $582,166 before deferred abandonment provisions . . . and a net of $16,561 after they were deducted.

Generally rising costs and lower passenger counts—the same troubles that transit operators had all over the country—reduced revenues by more than a million dollars . . . but TCRT managed to reduce expenses by approximately the same amount.

In order to keep step with rising costs, the company made application to the Railroad and Warehouse Commission for a straight 20-cent fare with a two-cent charge for transfers. Hearings on this request were still going on as the year ended, however.

The milestone of 1954 was the complete conversion to buses. TCRT scrapped or sacrificed more than $12½ million worth of property no longer useful. This included some 26 acres at its Snelling Avenue property in St. Paul, sold for a million and a half dollars. The portion of the property that was kept was used for new facilities and garages which cost $1 million.

In 1955, with conversion completed, and with a tighter, more efficient operation—working personnel were down from 2,900 to 1,782—TCRT managed a net income of $562,368 before abandonment write-off. Net income after the write-off was $44,369.

This was in spite of revenue losses of about $1 million . . . and again TCRT was able to counter with reductions in expenses of about the same amount.

To further complicate the situation, the Railroad and Warehouse Commission not only refused to grant the fare increase requested back in 1954, but actually ordered a reduction in token fares from 18 to 17½ cents, as well as a cut in suburban fares.

The company immediately appealed these orders to the courts, and continued to charge the same fare, while issuing receipts for redemption in case the Commission should be upheld. It was only recently that TCRT won this battle. The Commission order was vacated and the regulatory body subsequently granted TCRT a 20-cent fare with a token rate of 19 cents.

For Twin City Rapid Transit, then, the advent of the new management in 1951 meant not only a change in company policies and methods—it also meant a definite upswing in the financial situation of a transit company long beleaguered by fiscal woes.

The firm, aggressive policies adopted by Ossanna and his management team, the courage to fight for what is right despite the odds, have proved beyond a doubt that transit—and transit leadership—can be a vital, dynamic force in its community.

Buses Line up Twice an Hour

EVENING LINEUP OF BUSES takes place every half hour in downtown Birmingham . . . permits passengers to transfer from one route to another with no delay. Above, supervisor prepares to wave buses off after checking arrival of all routes.

PLANNING THE SWEEPING CHANGE are Loren K. Carter, President Donald S. James and VP Clayton S. Steele.

In New Birmingham System

BIRMINGHAM TRANSIT'S SCHEDULE DEPARTMENT has put into effect a unique scheduling system aimed at making life easier for transit riders during the off-peak evening hours and all day on Sunday.

You might call it a "constant lineup" of buses in which 75 per cent of the 26 routes operating during those hours meet twice an hour in the downtown area to permit riders to change from one route to another without long delays and aggravating waiting time.

It's evident that to set up such a timetable for 20 routes or so required a tremendous amount of work. Actually, it required months of preparation, study and planning by Birmingham President Donald S. James, Vice-President Clayton Steele and Director of Traffic Loren K. Carter.

That preparation bore fruit on March 4, when the lineup, usually reserved for the last runs of the night, began operating every half hour all day Sunday and after 8 pm every weekday evening.

Buses of all routes involved arrive in the downtown area ten and 40 minutes after the hour, and leave five minutes later.

That five-minute period is plenty of time for passengers to transfer to their outbound bus, as the downtown terminal points are no more than one block apart.

A supervisor patrols the terminal area to make sure that all routes are present and accounted for . . . then waves 'em off when all riders have arrived and transferred to the bus they want.

Naturally, such an intricate meshing of routes involved a great amount of schedule revision. In actual fact, it meant completely new schedules on almost the entire system.

President James and his executives felt that it was worth it, however, for the increased benefits it provided for Birmingham Transit riders, who frequently had been discouraged from off-peak riding because, as Don James put it, "There was no way of connecting except if the schedules *happened* to meet."

To notify riders of the sweeping new improvement in service, Birmingham Transit went on a vast schedule-printing and distributing program.

Here is how VP Clayton Steele describes it:

"The company encourages patrons to call or write for printed schedules of their routes, and we keep the lists of these addresses. More than 90,000 route schedules were distributed in connection with this change. In addition, a special schedule showing the downtown leaving time of all buses after 8 pm was prepared and distributed.

"More than 35,000 of these special night schedules were given out, with approximately one-third of the entire schedule distribution made by direct mail."

Birmingham Transit prints its own schedules—handy four by seven and a half inch cards which fold three times into convenient wallet size. Since the cost of printing them is only $6 per thousand, BTC could afford such a large-scale distribution as that described above.

On the back of the special night schedules the following message is printed:

"All evening buses leaving downtown 15 and 45 minutes after the hour arrive in town five minutes earlier and remain at the stop indicated beside the route number so that passengers will have time to change from one bus to another without delay."

Birmingham officials are strong believers in "even headways" whenever possible, as they make it easier for riders to remember the exact time their buses leave.

The particular times chosen for the evening lineups—15 and 45 minutes after the hour—were based upon knowledge of the traveling and working habits of Birmingham citizens.

Now in the works is a plan to continue the off-hour lineups in the pre-peak morning hours—between 5 and 6 am.

As a matter of fact, it is already in effect during those hours on some of the routes involved. Because of different travel and work habits at those hours, however, the buses will meet in the lineup on the hour and the half-hour, and leave five minutes later.

Since most people are due at work either on the hour or 30 minutes later, this gives them plenty of time—25 minutes, to be exact—to get to their destination. During those early morning hours, when the buses can make good time, riders can be assured of getting to work punctually.

One of the most important effects of the constant lineup, from the company's point of view, is that it permitted mileage reductions while at the same time improving service for the public.

No less than 3,500 miles per week have been lopped off Birmingham Transit schedules as a direct result of the lineup.

Normally, you might expect public protests against such a mileage reduction, but that wasn't the case, proving once again that what the public really wants is good service, not merely a lot of mileage.

When the lineup went into effect on March 4, BTC officials were frankly curious to see what the public reaction would be. After two months of operation, Clayton Steele was able to report:

"The public has accepted this lineup with no adverse criticism, and we have received many compliments from patrons who are able to make changes without delay, even though headways are 30 minutes.

"This idea has proven very practical in that we were able to provide acceptable service as well as make substantial economies in night and Sunday operation."

In June—It's Maintenance

BUS TRANSPORTATION'S 31st Annual Maintenance Issue will be off the press in June. This popular number will be packed with meaty articles that tell what successful operators are doing to cut maintenance costs through labor-saving methods and equipment.

Dramatic presentations of shop equipment in action will show how modern bus maintenance shops are cutting their production costs with new and improved products.

Don't miss this big special issue—the 31st Annual Maintenance Issue.

SUPT. OF TRANSPORTATION CHARLEY SELF, left, is directly responsible for operating the 152-bus fleet.

Then and Now: the 25-Year Story

IN OUR MARCH, 1930 ISSUE BUS TRANSPORTATION published a story on the school bus operation run by Jefferson County in Alabama.

Now, twenty-six years later, we revisited Jefferson County to find out just how school bus operation had changed in a quarter century. As was to be expected, more and more this public school bus operation was beginning to take on the aspect of big business.

There is another change, too. Officials of the county school system have recognized that bus operation is a highly specialized field. They are more cost-conscious now than they were 26 years ago. Just like common carriers do, they realize that an extra penny per mile cost adds up to big money at the end of the year . . . and conversely, that a penny saved is really a penny earned.

They are far more maintenance conscious, too. In 1930 the maintenance setup was not nearly so well organized. Then much repair work was farmed out . . . now the Jefferson County shop handles just about everything except spring repairs.

The growth of this school bus operation, which started back in 1922, parallels the growth of other school bus systems in the country. It is closely tuned to the increase in school population and the merging of tiny, one-room local schools into centrally located, consolidated schools which require transportation of children from the communities they serve.

To get an idea of just how the Jefferson County system grew, let's look at it now as compared with the way it was described in our 1930 article, prophetically titled, "Motor Bus Dooms Little Red School House in Sunny Alabam'."

1930 • "More than 200 schools in Jefferson County, exclusive of the city of Birmingham, are served by a fleet of 54 White buses, all owned and operated by the Board of Education."

1956 • The Board of Education owns and operates 152 buses, including 55 with 66 passenger capacity, 26 60-passenger jobs, 46 54-passenger buses, 36 at 48 passengers, one 32-passenger and two 30-passengers. They serve 120 schools.

Bodies are by Superior, Bluebird, Wayne and Thomas, and buses are powered by Chevrolet, Ford and Dodge engines.

Then—"Last year (1929), the 54 vehicles owned by the Board operated nearly 350,000 miles and carried approximately 3,000 pupils."

JEFFERSON COUNTY SCHOOL BUS SYSTEM does its own maintenance, including paint and body work.

# of an Alabama School Bus System

Now—The present fleet runs over 1,000,000 miles a year and carries 17,000 children a day.

Then—"Total transportation costs for the scholastic year ended June 30, 1929 amounted to $88,247.50."

Now—Scheduled expenditures for the scholastic year ending in June, 1956 are $276,000.

Then—"Drivers are paid from $15 to $18 per month. Out of this salary the driver pays a small stipend to a "captain" whose duty it is to get out of the bus at railroad crossings and signal the driver to proceed if the track is clear."

Now—Adult drivers are paid $70 per month to start, and $75 a month after the first year. After three or more years they get $80 per month.

Student drivers are paid at half those rates. They must have completed a high school driver training course, and in addition must attend classes for new school bus drivers which are run by the county during the summer.

It is interesting to note, however, that the idea of a patrolman, or captain, on each school bus still exists. Now it is a substitute driver, at no pay, who acts as monitor on the bus and as lookout at railroad crossings. Whenever he has to drive the run, he is paid at the rate of the regular driver, but otherwise his only compensation is that he's next in line for the job when the regular driver leaves or is graduated.

Incidentally, there is very little turnover in adult drivers. For instance, out of 113 drivers there were only five beginners at the start of this school year. And as a general rule as many leave at the mandatory retirement age of 70 as leave by simply quitting the job. It's partly accounted for by the fact that many of the drivers are rural preachers who find school bus driving an ideal way to augment their incomes.

The entire school bus operation is under the guidance of Dr. I. Fred Simmons, superintendent of Jefferson County Schools, and through him, of course, to the county board of education.

Direct supervision is vested in a director of transportation, Charley M. Self, who for all practical purposes fulfills the duties of a general manager. He is in charge of all maintenance and operations functions, and works closely with school principals on transportation problems.

The principals themselves are directly concerned with school bus operation, as they are the immediate supervisors of all drivers whose runs terminate at their schools.

Continued on next page

This creates a close contact between the drivers and the principals, and makes such problems as discipline on the buses considerably easier for the drivers than it would be if such contact did not exist.

There's hardly any problem at all on vandalism in the buses. That's due, according to Dr. Simmons, mainly to the efforts of Mr. Self, who's a "wizard" at detective work whenever bus equipment is destroyed. He tracks down the culprit and makes either him or his parents pay full damages. If they don't want to, he "pops 'em into court," where generally they wind up paying far more than they would have in the first place. So far this year only one vandal remains uncaught. All others have fully paid for the damage they did to buses.

This firm attitude on the part of school bus authorities has resulted in definite money savings. It used to take a full-time man in the upholstery shop to repair damaged seats and upholstery. Now the services of a part-time man are sufficient.

The maintenance department consists of a total of 21 men and includes a foreman and mechanics in the central garage as well as "area mechanics" who do repairs during school hours when the bus is not in use. They also make repairs and adjustments at drivers' homes, where buses are kept overnight.

This "roving mechanic" system is another holdover from the early days of the Jefferson County school bus operation, and it has proved very effective in keeping up a high standard of safety and dependability.

The area mechanics work out of specially-fitted trucks, and can do sizable repair jobs on the bus no matter where it happens to be located.

Each summer every bus gets a thorough overhaul in the central garage, located in Birmingham. There every type of maintenance work is done, including unit and engine overhaul and rebuild as well as body work and painting. Since Alabama weather is generally on the mild side, many of the shop facilities are located in rough outdoor shelters. It doesn't appear to impair efficiency, however—last year, for example, there were no serious delays due to road failures, and there has never been a fatality caused by an accident to a Jefferson County school bus.

Much of this is due to an improved preventive maintenance program, accelerated after recommendations made in 1953 in a special study of the system conducted by the School of Education of Alabama Polytechnic Institute.

At that time the survey reported: "In the opinion of the survey staff, school bus maintenance in Jefferson County is very good. In fact, the maintenance program is much better than in many other areas."

The report recommended an improved preventive maintenance schedule, however, and an increase in manpower to make it possible. This has been done, with the result that the PM program, then considered very good, is now considered excellent.

The survey points out also that in the last analysis good preventive maintenance rests upon driver performance, and recommends constant training and supervision of drivers as the key PM factor. Jefferson County officials agree thoroughly with this recommendation.

The maintenance department accounts for a good part of the expenditures of the Jefferson County school bus system, but it's interesting to note that like any common carrier operator, salaries and wages take the lion's share of the money, accounting for about $200,000 of the total allotment.

This year $38,500 was allocated for the purchase of buses. Another $33,340 will be spent for gasoline, and $1,150 for oil and lubricants.

In addition, a thousand dollars will be spent on new parts, with another $4,000 going toward general operation of the garage.

As far as purchase of new equipment goes, Jefferson County is trying, whenever possible, to go according to the recommendations made in the survey by Alabama Polytechnic. They were . . .

1. "All buses and major equipment items should be bought on competitive bidding. The bidding may be done at the state or county level, but with rare exception it is believed that competitive bidding is the only defensible way to purchase buses and other major equipment items.

2. "A bus retirement schedule should be adopted on the basis of economical bus life. Bus life cannot be rigidly defined in terms of years, and must be finally judged in the light of cost analysis. However, it is believed that the general assumption of replacing buses after ten years of service is sound.

"If careful cost studies bear out this generalization, the Jefferson County Board of Education would need to purchase approximately 14 buses a year, not including buses which may be needed because of an expanding transported enrollment."

It's almost certain that more buses will be needed because of increased school population, as in Jefferson County alone the number of students is growing by 1,200 to 2,500 per year.

As the number grows, the school bus system will have to increase to meet the larger demands placed upon it. Besides that, it is becoming more recognized that the school bus—as well as other buses—is in itself an ideal educational tool.

In fact, in Alabama the attorney general has ruled on several occasions that it is perfectly legal for school boards to use their buses for purposes other than strict transportation of students to and from their classrooms.

Yes, the school bus is becoming more important every day. Already it has reached the point where the modern consolidated school cannot exist without it. This fact is bound to lead to a reappraisal of educational thinking on all phases of school bus operation—including the very important one of finances.

As the Alabama Polytechnic survey put it: "It is essential for everyone connected with transportation to understand that the modern consolidated school is totally dependent upon transportation services. Since transportation is essential to the basic organization and very existence of the modern school, it must be treated as an integral part of the school program; it demands as much careful attention from the administrator as other parts of the school program.

"Pupil transportation is still classified as an auxiliary service in school fund accounting. But it is not an auxiliary in the truest sense of the word. One of the major challenges in the field of school bus administration is that of securing an administrative consciousness of the integral relationships of the school bus to all other phases and activities of the school."

Transit's Golden Age Lies Just Ahead of Us

It isn't necessary to apologize for transit, or for its role in our cities. Here, in what might well be a model speech for other operators, one transit man looks ahead at the future of the bus—and sees a rosy one.

By James C. Haugh • *Vice-President, San Diego Transit System*

SINCE WORLD WAR II, cities over the nation have been inundated with vast numbers of automobiles and trucks that have flooded our highways and streets. The resultant traffic jams are alarming everyone who has responsibility or interest in this problem . . . and who, in fact, can escape it?

People are dying on our roadways. The annual destruction of life and property troubles even the most cynical among us. People never before affected are becoming interested in freer and safer movement of people and goods within our cities . . . in the parking of vehicles . . . in parking meter charges, location of traffic lights, loading zones, one-way streets, traffic lanes, freeways—and all the modern techniques of traffic movement and regulation.

The ordinary citizen is befuddled, but keenly aware of these new concepts.

The principal cause of our problem is that many of our streets were not laid out to accommodate the automobile at all, let alone in such great numbers—and the streets in concentrated areas cannot be enlarged. In other areas they can be enlarged only at astronomical costs. Most of the perplexing problems, therefore, resolve around the most efficient use of *existing* streets.

Unfortunately, public lethargy, political considerations and uninformed selfish interests have placed our cities 10 years behind times in our traffic programs.

But the age of awakening is immediately before us. The general public will not long tolerate the traffic hazards, the delays and the vise of inaccessibility that surround us. They will demand action—as even now they are doing in the older, more congested cities in the east.

Then, down will topple decisions made on the basis of personal influence or group pressure. Then, the traffic engineer will truly be able to ply his trade most effectively for the benefit of the vast majority of our citizens.

Transit has a major role in the future of our cities and in the evolution of an intelligent intra-city traffic program. Indeed, transit and traffic engineers must join forces in the big job that lies ahead.

I don't want you to think for a moment that I emphasize the importance of transit without good reason.

And the reason I believe the Golden Age of City Transit lies just ahead is very simple—it is *efficient!*

It is efficient because transit moves so many more people for the street space it occupies . . . and because it need not park. Buses represent just over one per cent of the vehicles entering and leaving downtown San Diego, and yet they carry 50-60 per cent of the people.

As to parking, you need only to reflect upon the vast amount of expensive downtown space dedicated to private car parking both on and off the street—then realize that bus stop zones represent less than four per cent of the total downtown curb space, while carrying half the load.

As congestion mounts, efficiency of movement along our roadways will become an absolute necessity, and special privileges now granted the private automobile will give way.

Let me take one more step through the crystal ball. In all cities and portions of cities, except the most densely populated, the bus will be the transit vehicle of the near future.

It will be a greatly improved bus with more streamlining and accommodation for passenger comfort—but a rubber-mounted, surface-navigating vehicle it will still be.

Why? Because of the low initial investment, the lower cost of operation, the maneuverability, the safety of the bus.

No other mode that mass transportation possesses has the flexibility to keep abreast of the dynamic movement of the expanding modern city with its shifts in population, its changes in commercialy activity, its ever-altering traffic pattern.

For instance, our company has made 30 extensions of routes or brand new routes since 1949. In this time our miles of route have increased by 30 per cent. If we were still a rail property not one of these extensions could have been made profitably—and the social and commercial intercourse of this great and growing city would have been adversely affected.

Now that I have, I hope, convinced you that transit buses will be with us for a long time, let me dig into transit a little deeper.

First off, managing a transit operation is not unlike

SAN DIEGO'S TRAFFIC CONGESTION PROBLEM could be eased considerably if transit were given the green light to help solve it. Instead, the author says, it has been hampered . . . but he predicts a change in that situation in the near future.

judging a baby contest with all of the doting mothers present—and glaring. You just can't make all those mothers happy.

One of our basic difficulties is that few people understand our true function—to provide the best service for the majority of people at the lowest possible fare.

This means bisecting principal areas of population, *not* giving door-to-door service. It means establishing routes for principal flow, *not* subordinate movement. It also means skip-stops for speedier service, with added footwork for some people, and transferring from route to route on less frequented travel paths.

Our job in San Diego is complicated by the fact that we serve a sprawling area that has the lowest population density of any major city in America. Our density in 1950 was 3,029 people per square mile. Los Angeles, with its reputation for sparcity was 50 per cent more dense, San Francisco almost six times more, Seattle and Portland twice as dense, Chicago six times and Manhattan 29 times.

To transit people, density winds up as a measure of how many riders we can expect along a mile of any given route, and for us in San Diego this means *not many*.

One of the results: less frequent service along some routes. Another: zone fares, which we have had since the early 1920's.

One advantage, on the other hand, is faster service—not fast enough, but 50 per cent faster, in fact, than cities of comparable population. We also have extremely different geographic conditions such as bays, canyons, valleys and rugged terrain that force a circuitous layout of certain routes.

We are performing a very efficient transit service here, despite these difficulties.

In the mechanics of operation and in the sense of public stewardship in our work we doff our hats to no one in the transit field.

We are the first major transit system in the United States to become 100 per cent standardized on one type of diesel bus. While it means savings, it has been possible only through the investment since 1949 of more than $4 million for improved service equipment.

We have doubled our tire life, increased fuel mileage by 50 per cent, won the national transit safety award twice and placed second twice in six years, established more innovations in the maintenance field than any similar-sized property, and our buses now run more than twice around the world for each failure on the road.

In spite of all this, our riders are declining year by year. If this were unique among transit companies, my resignation would be on the boss' desk tomorrow morning. But this same trend downhill has been experienced in all transit properties in the country—big and little. Some of the reasons . . .

1. Decentralization
2. The five-day work week
3. Drive-in shows, banks, eateries
4. Television.

But by far the most disastrous of all has been the increased use of automobiles. In San Diego registrations from 1945 to 1954 were up 104 per cent. Nationwide figures were almost equivalent. In addition, the *use* of autos has doubled, creating a quadrupling effect. The resultant intense traffic has tended to slow down our

service and make it less attractive.

This decline in riders has also meant higher fares. Certain quarters have blamed higher fares for transit's major loss of riders, but there are many examples which dispel this myth. One is the municipally-owned bus system in the growing city of Phoenix, Ariz., where fares were stationary at 10 cents per ride for a period of five and a half years ending in 1954.

In this same period of time, bus riders decreased by one-third . . . and the taxpayers made up the resulting deficit.

People have had plenty of money to buy cars, and once in their possession they have used them . . . and hang the expense. The pride of automobile ownership has been a more potent force than the saving of riding a bus.

So the principal factors which caused the drop in transit riding have not been within the control of transit management. But they have weakened the ability of transit to serve.

Here, then, is the riddle that rests so uncomfortably in the minds of transit management everywhere: transit is the most potent weapon against the twin evils of traffic indigestion and parking saturation, and against downtown disintegration—and yet transit hasn't been given the green light in tackling these problems.

Instead, the principal attention of government officials, business leaders and the general public has been concentrated on accommodating and improving the movement and parking of private cars. Vast sums of money have been spent on highways, freeways, traffic controls, parking facilities, by-passes, overpasses, underpasses, parking meters—all to assist the private automobile.

Recently, grave doubts have been raised as to the wisdom of many of these expedient and quickly-devised solutions for accessibility and movement.

William A. Wells, president of the Buffalo, N.Y. Municipal Research Bureau, commented: "Our cities have spent more than $10 billion improving streets and many more millions for parking facilities, yet our traffic congestion gets worse instead of better."

Harland Bartholomew, noted city planning expert, warns: "It should be evident to all who are interested in the present as well as the future welfare of our cities that the streets of our business districts be cleared for expeditious mass transportation flow regardless of whose individual interests are involved or whose toes are stepped upon. This is a matter of paramount public interest—a matter of dominant public necessity."

Despite its obvious and valuable advantages, transit has been side-stepped, overlooked, ignored and politically booted from pillar to post. In other words, during these last ten years, or if you please, during the "Auto Craze Decade," transit has been completely taken for granted.

Meanwhile, decentralization has been going on. And as such, it is not bad—that is, unless carried too far.

The ultimate results in a city where decentralization runs riot are . . .

1. The devaluation and decay of central business districts.

2. Loss of integrated central areas where businessmen, lawyers, doctors, banks, restaurants, stores and offices are all located within walking distance of one another . . . in other words, the loss of "living efficiency."

3. Loss of the opportunity for competitive shopping by the retail buyer—one of the distinct advantages of central areas over outlying shopping centers.

4. Loss of city tax revenue from central districts—the only areas where city services cost less dollars than the tax dollars collected.

5. The shift of this tax burden to home owners.

W. L. C. Wheaton, Chairman Regional Planning, Harvard University, summed up the danger when he said: "Unless cities adopt policies which will enable masses of people to be moved efficiently into central business districts the congestion now threatening such areas will lead to progressive economic deterioration."

Transit can solve the problem. . . But first there are things which must be done to strengthen transit here and improve it so that present riders will not only continue to ride, but former riders will return.

I believe that the answer lies in two directions, in addition to our company's continued modernization and improvement program:

1. Eliminate unfair and burdensome taxes on the bus rider, who ultimately pays them.

2. Even more important, improve the speed of transit, so that it can compete in speed with the private auto.

Here are some of the important things that must be done . . .

a. Transit should be given priority in movement over the streets. Traffic officers should be trained to show preference to a bus over an auto. Why not? It's 50 people versus one and a half.

b. Traffic lights along congested portions of transit routes should be geared to bus movement.

c. The length and location of bus stops should be improved to conform with distances recommended by the Institute of Traffic Engineers' Handbook.

d. More rigid enforcement of double parking, parking in bus zones, and perpendicular parking of trucks should be employed along bus routes.

e. Curb parking should be prohibited along certain principal streets.

f. Right and left turns at certain intersections along bus routes should be prohibited.

g. Bus turnouts on freeways should be provided.

h. Streets along bus routes should be given priority in maintenance. They should be the smoothest streets in town.

i. Exclusive bus lanes in heavily congested areas should be made available to transit riders.

Only with this type of assistance can transit wage effective war on traffic and parking problems.

Those who suggest that measures such as these would be political suicide should look to cities such as Toledo and Philadelphia, where downtown on-street parking bans have been successfully and permanently established; to Nashville, where exclusive bus lanes have been hailed as a significant victory over traffic congestion—and to our own house-to-house surveys which indicate that over 80 per cent of the citizens—yes, *voting* citizens, if you please—depend on transit to provide their ride either regularly or occasionally during each year.

It is my conviction, based on what is now happening in other communities, that the above suggestions will eventually be adopted in San Diego—and the sooner the better for our city.

The transit rider has been the forgotten man lately. But he will emerge and claim his just share of right-of-way curbs and traffic consideration. If he is not accorded these privileges, our cities will surely die of traffic strangulation.

Consulting Department

A question and answer department designed to assist readers seeking expert opinion on some particular maintenance problem. Here are some recent opinions on . . .

Air Springs

The Questions:

1. How do air spring and leaf spring maintenance costs compare.
2. Which requires more maintenance? Which is easier to change?
3. Which type must be changed more frequently?
4. Has reduction in road shock with air springs reduced need for maintenance of body or other units to any extent?
5. With air springs what type of service is needed and how often?

The Answers:

On 1,600 buses with air springs, performance is phenomenal while maintenance costs have been negligible. Air bellows failures are so infrequent as to be almost nonexistent. The few failures which have occurred were due to external cause, principally abrasion. Although there is no way of putting a dollars and cents figure on the reduction in body maintenance due to road shock, we do know that extremely little shock is transmitted to the body and that wear and tear due to such shock must be reduced drastically.

W. A. Duvall, Vice President Eqpt. & Maintenance, The Greyhound Corp.

We have 100 buses with air suspension in operation for 2½ years and so far, the experience has been good. There have been 12 leveling valve failures and several bellows failures, but on the whole, maintenance has been far less than with conventional leaf springs. Air springs do not require lubrication nor periodic service other than to check oil in leveling valves.

W. E. Williamson, Supt. Auto. Eqpt., St. Louis Public Service.

On 45 GM 51-passenger coaches equipped with air springs we have averaged 150,000 miles per vehicle for a total of 5,726,070. Except for a couple of minor adjustments on the leveling valves which required only a few minutes, we have not had to service these air springs. The vehicles ride very smoothly and we are optimistic that air springing will beneficially affect body life.

C. O. Sparhawk, Vice President, United Transit Co.

Sizable maintenance savings are anticipated with air springs but it is much too early for us to present accurate data. By reason of the greatly improved ride they provide there is a great gain in passenger appeal. One problem presented by this type of spring is towing of disabled buses.

V. C. Peterson, Supt. Eqpt., Municipal Railway, San Francisco.

We have had about three years experience with air springs and at present have 161 coaches so equipped. So far we have had only two bellows failures. Due to the relatively short time air springs have been in service, also because of trouble-free operation thus far, we are unable to compare maintenance costs with leaf springs. Our experience indicates that less maintenance will be needed and that the bulk of it will be shock absorber and torque rod grommets. Less manpower is required; one man easily can change any part of an air spring where leaf springs require two men. It is too early to say whether body life will be increased due to less road shock transmitted.

W. E. Davis, Supt. Eqpt., Cleveland Transit System.

Nine buses with air spring suspension have averaged 120,000 miles each on our operation and with no trouble whatever up to the present time. The only service given them is to check oil level in leveling valves and to check air breather filters.

H. A. Grenert, Supt. Eqpt., The Green Line.

We have 31 Model 4512 TDH coaches with a total of 4,287,975 miles of service. During this time only two bellows were changed and 8 leveling valves overhauled; the bellows were changed at about 200,000 miles. Valves and bellows are checked at regular 4,000-mile inspections. As to comparison with leaf springs, we have 16 Model 4509 TDH with a total mileage of 4,350,181 and on these 46 springs were changed at a cost of $1,840.

Carl Richenberg, Supt. Maint., Buffalo Transit Co., Inc.

Maintenance of air springs is about one-third the cost of leaf spring maintenance. Air spring bellows can be changed in one-quarter the time required to change a leaf spring. Leaf springs are changed much more frequently. The only service we perform on air springs is to check the fluid level in the equalizing valves once a week. Obviously, reduced vibration contributes considerably to reduced body maintenance.

E. J. Marcinski, Mgr. Maint., South Suburban SafeWay Lines.

In 250,000 miles we have had no maintenance whatever on air springs, consequently, there is no question but what they require less maintenance than leaf springs. Reduced road shock also has reduced body maintenance.

W. M. Beadie, Pres., Zephyr Lines, Inc., Minneapolis.

We have accumulated only 120,000 miles on air springs with no failures of any kind. Servicing consists of inspection of fluid on scheduled inspections and changing check valve seats at 75,000 miles.

A. H. Williams, Asst. Vice President, The Connecticut Co.

Power Steering

The Questions:

1. **Will power steering be specified on new buses you may order?**
2. **Will it be installed on buses already in service?**
3. **What is your experience with power steering?**
4. **What special service or maintenance problems are involved?**

The Answers:

Approximately 1,600 coaches are equipped with power steering at present time. Our experience indicates that this feature will be adopted as standard equipment on all buses purchased by this company in the future. However, we have no plan to convert buses already in service to power steering.

Many of the "bugs" in early designs have been eliminated and, it is our opinion, some of the principal wearing parts can and will be improved to give greater mileage between rebuilding. From a safety standpoint, we do know that power steering in all probability has prevented several accidents, any one of which might have been serious, when a front tire blew out or right front wheel got off the road and onto a soft shoulder.

W. A. Duvall, Vice President Eqpt. & Maint., The Greyhound Corp.

Twenty-five power-steered buses have been in service on our property since June 1951. Maintenance of the power units has been somewhat costly, especially with regard to failures of accumulator bladders and fluid pump bearings. We do not consider installing power steering on coaches already in service. Experience on our 50-passenger buses indicates no necessity for power steering because the front axle load is well below 6,000 lb and the coach is easy to handle.

W. E. Williamson, Supt. Auto Eqpt., St. Louis Public Service.

Nothing to report on power steering, since we've had no experience. Our new 51-passenger GM coaches and our 44-passenger Twin Coaches both have the ability to turn at a 53 deg. angle and steer very easily due to precisely engineered weight distribution.

C. O. Sparhawk, Vice President, United Transit Co.

Power assist steering is definitely desirable from an operating standpoint and favorable reaction as result of lessened driver fatigue would indicate continued use on new buses. We do not plan to adapt power steering to older trolley or motor coaches. At this time our experience with power steering is too limited to estimate maintenance problems. However, left front tire wear is above normal and we are experimenting with a limiting radius to reduce scuffing.

V. C. Peterson, Supt. Eqpt., Municipal Railway, San Francisco.

We have 103 coaches with power steering at present. All of these vehicles are of the same make but only 50 have full power steering. These later buses can be maneuvered with use of one finger but the others require considerably more exertion.

Considerable maintenance has been needed to keep steering units in operable condition, namely:

1. All steering gear lever duct shields inverted allowing foreign matter to get into sector shaft oil seal and causing fluid leakage. This necessitated removal of the hydraulic steering units.
2. Trouble was experienced initially with drive shaft seals but this has been corrected.
3. Shortly after delivery of first 50 coaches it was necessary to repipe them; on the remaining 53, repiping was handled at factory.

Correction of the above problems has now been made and units are now operating satisfactorily with a reasonable amount of maintenance.

W. E. Davis, Supt. Eqpt., The Cleveland Transit System.

60% of our fleet is equipped with power steering. It is our intention to specify it 100% on any new vehicles which we will order. Other than to keep the hydraulic system filled with fluid and free of leaks there is no special service problem to report.

Oren Dryden, M. K. & O. Coach Lines, Tulsa, Okla.

Fuel Pumps

The Questions:

1. **Electric or mechanical—which type gives best performance and reliability?**
2. **Which makes are most satisfactory—AC, Autopulse, Bendix-Eclipse, Carter, Stewart-Warner?**
3. **What is mileage per failure? When are units replaced?**
4. **What is most common maintenance or service problem?**

The Answers:

Carter electric fuel pumps have given us the most reliable service. Reconditioning consists of renewing the brushes at 75,000 miles and occasionally replacing an armature at that time.

V. C. Peterson, Supt. Eqpt., Municipal Railway, San Francisco.

All gasoline units are equipped at present with Stewart-Warner dual electric fuel pumps. These average 51,181 miles per change.

C. O. Sparhawk, Vice President, United Transit Co.

We used three unit model Autopulse fuel pumps on 100 buses from 1947 to 1953 and had no particular problem with them.

W. E. Williamson, Supt. Auto Eqpt., St. Louis Public Service.

Electric fuel pumps give better performance than mechanical pumps in heavy duty service. Carter electric fuel pumps have given us better performance than any other; giving an average mileage of 102,000. Water in the fuel resulting in damage to the electric motor is chief cause of failure with this pump.

Continued on page 91

CRACKED WOODEN DOOR was damaged in accident, as shown in above left photo. Under new method of repairing it, the first step is for a mechanic to sand the paint from the area of the door which is to be repaired. This is shown in the above right photo. Formerly, this damaged door might have been scrapped, or repaired in a manner not completely satisfactory. In new process . . .

SHEET OF GLASS CLOTH is applied by mechanic, who uses a stapling gun to attach it. It may also be tacked on, if stapling is impractical for a particular operation. Above right, a flow coat of Everseal is applied over the glass cloth, and the door is ready for painting. After completion of this repair, the door is actually stronger than it was before it was damaged.

Glass Cloth and New Body Mud Make Green Line Repairs Easy

By Harold A. Grenert • *Supt. of Equipment*
The Green Line, Newport, Ky.

TWO NEW TYPES OF BODY MATERIAL are saving time and money for us at Green Line.

One, for repairing surface cracks where added strength is needed, is shown in use in photos above.

The other method, described and shown in photos on the opposite page, is for repair of dings, dents, gouges and scratches. These used to entail hammering and grinding and sometimes removal of inside trim . . . can now be done in minutes instead of hours.

About a year and a half ago our body shop set out to get a material with the following characteristics . . .

1. It must cling to a vertical surface with a minimum of sagging.

2. Ability to apply in any depth up to one inch, and to be ready for finishing in less than an hour.

3. It must be able to feather out at application for minimum finish grinding.

4. It had to take paint without priming.

5. It must remain bonded to panel under normal operating conditions.

6. It had to be able to restore original curvature to corner and crown panels at application.

A special material distributed in kit form by Kenoh Products Co., 6785 Marvin Avenue, Cincinnati, Ohio, and P. O. Box 53, Latonia, Ky. has met all these requirements. This material, with methods of application developed by our body shop, enables us to eliminate 90 per cent of finish grinding as compared to former methods.

This not only reduces the cost, but also cuts down on the possibility of costly errors.

Under our new method, here are the steps we use in repairing a damaged bus body . . .

1. Grind paint from area to be repaired.

2. Apply body material, which is called "body mud" to damaged area. Enough material should be applied to assure filling of all low spots.

3. Take acetate cover sheet and coat it with wax. Any kind of wax—car or floor, paste or liquid.

4. Place acetate sheet over body mud (wax to body mud) and fasten acetate with a strip of masking tape, preferably at the lowest point. On damaged areas of eight to ten inches in diameter, or of more than half an inch deep it is better to attach acetate cover at one edge before applying mud. Then it can be put into place quickly to prevent the sagging which might otherwise take place in repairs of this size.

5. Flatten acetate over area.

6. Use a scrap piece of body metal as a straight edge, wide enough to contact the true panel line on each side of the damage. Press firmly and draw straight edge over acetate covering to the end, so as to squeeze out excess material. On large size repairs we attach acetate to panels with several small pieces of masking tape after feathering. This keeps it in place while the material is hardening.

7. In about half an hour remove the acetate covering and grind very lightly, as the surface of the patch conforms to the acetate surface and already has a glass-like finish.

On corner or crown panels the same procedure is followed in applying material. When feathering out, a piece of body metal no heavier than 20 gage is used. This gage conforms easily to the curvature of the panel, thus restoring the original contour of the panel during the feathering process.

All that remains then is to paint the panel. We have found the entire method perfectly satisfactory, and as mentioned before, far less costly than the former method of repairing damaged body areas.

Here is a cost breakdown on a repair job we did on one bus. This was after the men had become thoroughly familiar with handling the repair material.

The bus involved was a 36-passenger job, on which 15 damaged areas had to be repaired.

Here is a list of the damages . . .

- One gouge 15 inches long and two inches wide.
- Two dents in the rear belt rail panel about three inches in diameter. (These came from backing into windshield wiper shafts when parking coaches.)
- Twelve dents ranging in size from three inches to eight inches, two of them on the front left hand corner and one on the crown panel.

Believe it or not, we repaired these 15 damaged areas in just two hours labor time.

We used one repair kit for the entire job, at a material cost of $12.95. Most of the damage was in areas in which trim, seats, etc. would have had to be removed . . . or where it would have been necessary to rivet a patch over the damaged area.

As you can see, in either case it would have been far more costly than under our new method.

THIS DENT WAS CAUSED when the bus backed into a windshield wiper shaft in the parking garage. Ordinarily, repairing a dent of this size would entail considerable time and expense. But...

BODY MUD IS APPLIED under Green Line's new method. One mechanic packs it in while another holds back the acetate sheet to be used as a cover while mixture is drying. Now . . .

ACETATE COVERS ENTIRE PATCH, and is held in place by masking tape. Mechanic uses scraper to remove excess material and feather the edges of the patch. In an hour it can be painted.

Here are actual figures kept by a Washington, D.C. businessman who frequently travels to New York City. They are accurate records of time and cost when he went . . .

. . . by bus

Time	
Taxi to terminal	15 min.
Bus time	300 "
Baggage pickup, taxi	15 "
Total time	**5 hrs. 30 min.**
Cost	
Bus fare and tax	$5.89
Taxi both ends	1.15
Total cost	**$7.04**

. . . by plane

Time	
Taxi, limousine and check-in time	90 min.
Flying time	60 "
Deplaning, baggage	30 "
Limousine, taxi	50 "
Total time	**3 hrs. 50 min.**
Cost	
Plane fare and tax	$15.84
Limousine both ends	2.35
Taxi both ends	1.00
Total cost	**$19.19**

Figures like these prompt the question . . .

Is Intercity Selling as Well

This isn't a story by any one person. It's a compilation of ideas gathered from leading intercity operators across the land, who feel that the industry, including themselves, could do a better selling job.

DID YOU EVER HEAR THE STORY about the dog food company which made the best dog food in the world, had the best management, the best advertising and the best sales force . . . but still went out of business? Why? Because the dogs just wouldn't eat the stuff.

Maybe that could apply to intercity bus companies as well. They have beautiful equipment, frequent schedules, competent management—all the elements of a satisfactory product are there. Why then are they losing riders? Could it be that people just don't like to ride buses? That isn't necessarily so.

Maybe it's the fault of the intercity bus industry—particularly of the men whose job it is to sell bus riding. They haven't sold it as a desirable mode of travel. In fact, far worse than that, a vague social stigma has been permitted to become associated with bus riding. Picture the last meeting or convention you attended. You probably heard people say, loudly and clearly, "I flew here," or "I drove," or "I came by train." But how many do you hear announce proudly, "I came by bus?"

Is it possible that the industry has permitted one of its strongest features, economy, to become associated in the public mind with cheapness, and therefore undesirability? The answer, if we face the truth, is yes. Most people, even poor people, have a rather undefined idea that bus riding is for poor people, but not for them.

Perhaps there was a time when this idea was justified, but right now it isn't. For while much can and must still be done to improve service, the fact is that the product we have to sell has advantages all its own which make it the equal, and in many respects the superior to competing forms of transportation, including "dat ole debbil" private auto.

If you don't feel that way, then you probably have no business selling bus rides. If you do, then let's look at some of the features of bus riding which must be sold to the public in order to get them to *want* to ride buses, rather than other forms of public transportation. We might try selling on the basis of . . .

Time—On trips up to 300-400 miles buses can just about meet air or rail time . . . or come so close to it as to make the difference unimportant. If that statement seems a little rosy, consider a trip taken by thousands of people each day—from New York to Washington or vice-versa.

Let's take one businessman who actually tried all three ways. His findings are shown in the tables above, but they all boil down to this . . .

When he went by air, he saved an hour and forty minutes, but it cost him an extra $12.15 to do it.

When he went by train he saved seventy minutes over bus time, but spent $2.90 more than total bus cost.

Admittedly, a time saving even of seventy minutes might be vital to some business travelers. Let's concede them to air or rail. But surely, with the proper advertising and selling approach, buses should get the majority of other travelers, to whom a saving of $12.15 or even $2.90 is not to be taken lightly.

To bring it home even more clearly (and perhaps that is what the industry should do with the public), suppose you and your wife lived in Washington and wanted to go to New York for a week end.

If you went and returned by bus you'd travel a total of three hours and 20 minutes more than by plane . . . but counting airport limousines both ways you'd save a whooping $43.74—easily enough for an enjoyable evening or two in New York

Of course, we have chosen these two cities arbitrarily. The same would

. . . by train

Time	
Taxi to terminal	20 min.
Train time	210 "
Baggage pickup, taxi	30 "
Total time	**4 hrs. 20 min.**
Cost	
Train fare and tax	$8.34
Taxi both ends	1.60
Total cost	**$9.94**

as it Can?

generally apply between any two communities about 200 miles apart.

It seems only reasonable to assume that a sales executive in a bus company would sell the strongest points of his product—just as sales executives in other industries do. Yet it's an undeniable fact that the average bus company hides its light under a bushel when it comes to stressing its superiority over other forms of public transportation.

Why? The answer seems to be a definite fear that to do so would antagonize the air lines and the railroads, which, by the way, show no delicacy of feeling for the bus industry in their own advertising campaigns. Undoubtedly it's commendable to avoid open friction with air and rail, which are actually our allies in the battle against the private automobile. But isn't it equally commendable to stay in business by attracting new riders . . . and attracting them by convincing them that in specified cases intercity buses are the *fastest* way for them to travel.

The fact that most people will not believe that statement until it is proved to them is the most convincing proof possible that there exists a strong need for more aggressive selling of intercity bus riding.

As R. J. O'Connor, Greyhound's vice-president in charge of sales said in an article which appeared in BUS TRANSPORTION last month (page 26):

"The continued improvement of highways and expressways into cities, enables modern air-conditioned buses to offer service on many express or limited-stop schedules of 100 to 150 miles actually superior to that offered by other forms of transportation.

"When we have that service, and most lines have some such schedules, it is up to us to tell the public about it in an emphatic, hard-hitting manner. Let's not talk about convenient, frequent schedules when we have the *best* service. Proclaim it is the *best* and prove it. The public misconception that buses offer the slowest form of transportation must be corrected. That mistaken idea is harmful to our business in this day when a lot of people think speed is the answer to everything."

Greyhound, apparently is planning to proclaim its service as best whenever and wherever it is. At any rate, the slogan it plans to use in future advertising, *"Would You Rather Go Faster or Get There Sooner?"* certainly contains a challenging note.

Speed isn't the only thing intercity bus operators have to offer, of course. But inasmuch as the public mind conceives of buses as the tortoises of the transportation industry, what better course can the intercity bus industry take than to let the public know it can win many a race over other forms of transportation?

That isn't meant to imply that all the other features of bus transportation should be ignored in the process. Statistics show that buses are the safest method of getting from one city to another—let's show that too.

And in most cases our frequency of schedules has every other form of public transportation beaten hands down, so that even if we take an hour longer to go from one place to another the traveler can often start two hours earlier and get there sooner. That's another thing that might well be pointed out.

What about pleasure? Many people—it might be more accurate to say *most* people—still envision the intercity bus as the primitive, uncomfortable vehicle it was thirty years ago. It's up to this industry to prove to them how wrong they are. With our air suspension, high speeds and panoramic windows we have the equipment with which to do a good selling job.

We have the market, too. In fact we have several markets in which to sell intercity wares. And while it may be true that the private auto is shrinking one of them, it's also true that others are growing.

The one that's falling off, of course, is the general travel market. But even in this case there are encouraging signs that some of it can be brought back as automobile driving becomes tougher and more hazardous. When a man has sweated and cursed traffic for four hours on a two-hour car trip it shouldn't be too hard to get him to try the bus next time.

Then there are the growing segments of our market—elderly people and the vast school field.

It's not necessary here to repeat again that the number of retired people with time, money and desire to travel is increasing year by year in this country. There's scarcely an intercity bus operator who isn't aware of it . . . and who wouldn't like to get a good piece of this growing travel market.

It's especially ideal for our industry, because for these people time is not important. Their main interest is pleasure. They want to see the sights and they have the rest of their lives to do it. What better way can they do it than by bus?

The school market, of course, is growing in every dimension. Besides the standard class trips to Washington D. C. and other points of interest, buses have many opportunities to serve the schools of our nation.

Educators themselves are recognizing the value of the bus in providing a flexible means of taking students to where they can *see* how things are done instead of just reading about it. With just a little prodding from the bus industry field trips by students could become a regular part of the curriculum in thousands of schools.

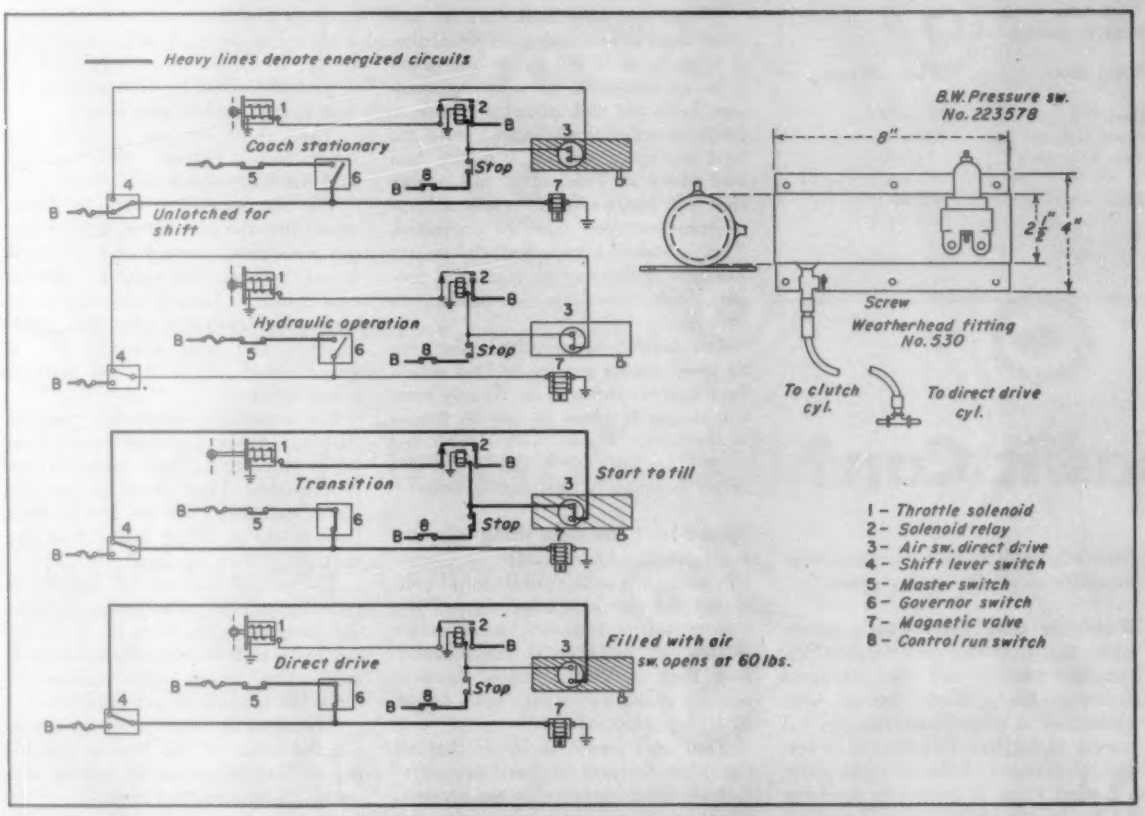
Teachers, too, can become important to the bus industry, as their long summer vacation and natural desire to learn make them ideal prospects for bus travel. Some of the larger carriers have just begun to work on attracting more of this teacher-travel market, and anticipate a good deal of success with it.

So when you get right down to it, we have a good product to sell, and a good market to sell it in.

We have competition, sure. But no salesman worthy of the name would accept his weekly check if he sold in a market without competition. The thing to do is holler from the rooftops whenever and wherever our product is better than that offered by any other form of transportation.

The public is funny—it usually goes for the best, especially when it costs far less than its competition.

Howjadoits



Substitute Switch Aids Clutches

By Olaf Todal and H. L. Gudmundson
San Diego Transit System, Calif.

DIRECT DRIVE SWITCHES on D-40 equipment, part of the control on single acting clutches, gave San Diego Transit System's maintenance department some trouble before Olaf Todal and H. L. Gudmundson came up with a substitute for the switches.

After rejecting substitutes used by other operators, the two men designed a switch utilizing a reservoir with a delayed air control valve. The accompanying drawing illustrates the operation by steps.

1. The coach is stationary, with shifting lever unlatched to shift to forward or reverse. Shaded lines indicate that air has entered reservoir. Since no current is flowing through this circuit, the action of air on the direct drive switch does not actuate the throttle solenoid.

2. The coach is in hydraulic operation. Note that all circuits are idle at this time.

3. This is the period of transition when the governor takes over at 21 mph and all circuits are energized. The energy from the battery to the magnet valve (No. 7) furnishes air to the direct drive cylinder and to the clutch cylinder. It is between these two units that a tee is inserted in the system. During transition, the air in the reservoir approaches 60 lbs needed to operate B-W pressure switch 223578.

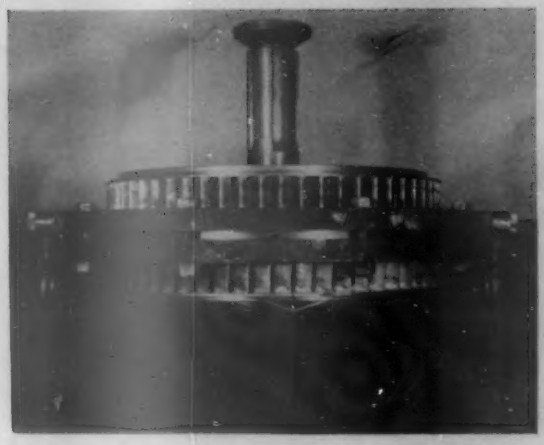
Shown also in the drawing at the Weatherhead fitting is a locking screw which holds the needle valve to a metering position to control the air entering the reservoir. This also provides the delay necessary to slow up the operation of the throttle solenoid so that the shift may be completed.

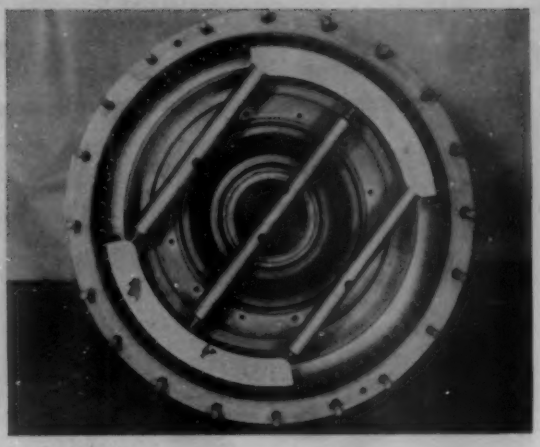
4. In the last stage, the air pressure has reached 60 lbs and the switch has opened. This opens the circuit to the solenoid relay (No. 2) and the engine returns to normal rmp, completing the shift.

After the direct drive switch is opened, the governor continues to furnish a circuit to the magnet valve, holding the transmission shift cylinder in direct drive.

The reservoir shown in the print is made from pipe with ends welded in place and mounted on the bulkhead. Aeroquip hose is used as a connection from the tee to the reservoir.

More than 50 buses have been equipped so far with switches of this type.





Two Tools for Transmission Rotors

Used at St. Louis Public Service Co.
St. Louis, Mo.

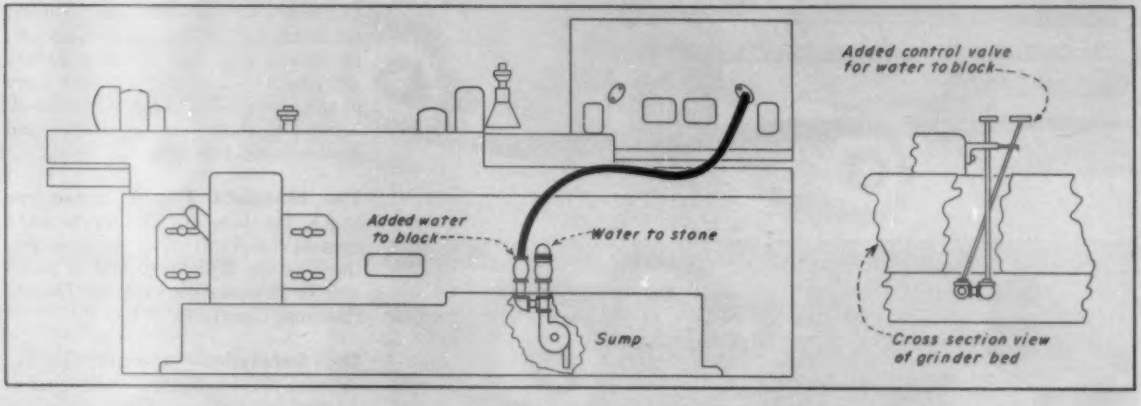
WITH A FLEET OF 1,200 BUSES practically all of which have torque converter transmissions, St. Louis Public Service Co. saves a substantial sum annually by salvaging transmission rotors on which the blades loosen up in service.

The repair is accomplished by welding, and in order to prevent distortion of the piece during welding and, at the same time, to assure a higher production, two special tools or fixtures are employed. Both of these were developed in the St. Louis shops.

The fixture shown in the first photo is a clamp which holds the hydraulic transmission rotor in a rigid position while the welding is in progress and thus prevents warping when heat is applied.

In the actual welding a low temperature process is employed to secure the ends of the blades in the rotor frame. The process is not only economical, but it also assures a long life for blades which have been fixed in this manner.

The fixture shown in the second photo is an adjustable anvil designed to expert pressure against the stationary blades in the turbine housing so that pins can be riveted through the outside of the case. This simple fixture not only saves a great deal of time in performing the job, but it also assures better work.



Dual Water System for Grinder

By Raymond W. Schmitz, Mech. Dept.
San Diego Transit System, Calif.

TO FACILITATE THE GRINDING of our engine blocks and heads, we added another source of water to our Van Norman 565 surface grinder. The dual water circulating system is made possible through an auxiliary circuit through a hose attached to the parts being ground.

The original factory water circulating system consisted of one spray outlet to the stone to the surface grinder. But it was found that water applied to the stone only did not give us the necessary cooling of the block and head, nor did it clean the stone itself from cast iron and emery dust.

By using the system shown in the accompanying sketch we found that we were able to improve results.

What's New

Superamic bus body . . .
. . . said to have more new safety features than any other school coach in any single year, is available.

The new coach has all-around panoramic windshield and wrap-around windows at the rear. Additional features include low-dip corners on the windshield, improved operating quarters for the driver, Ram-Jet air intakes, overhead enclosed door controls and Visiports. The new heavier-constructed front weighs 270 lbs more than any other conventional bus body front section.

A major factor in the front end is the patented windshield belt-bar which extends 4½ in. forward of the cowl. *Wayne Works, Richmond, Ind.*

Transit-type coaches . . .
. . . the Monoliner and Monobilt T are now being placed on the market.

The new Monoliner, a transit school coach, is being produced in models of 61, 67 or 73 student capacities. They are mountable on Marmon-Herrington Safe-way and Jay Madsen Safetyliner pusher-type chassis. Additional features of the Monoliner include: full wrap-around windshield and rear glass; inward folding doors; no overhead or outside mechanism; contoured stop and warning lights; extra-heavy gage front and rear body panels; exclusive roof-to-bottom-of-heavy-side-skirt side pillars and double-fluted rub rails.

The Monobilt T is a transit-type coach for General Motors forward control chassis. It offers the same features as the Monoliner and is available in 72-passenger capacity. *Oneida Products, Canastota, N.Y.*

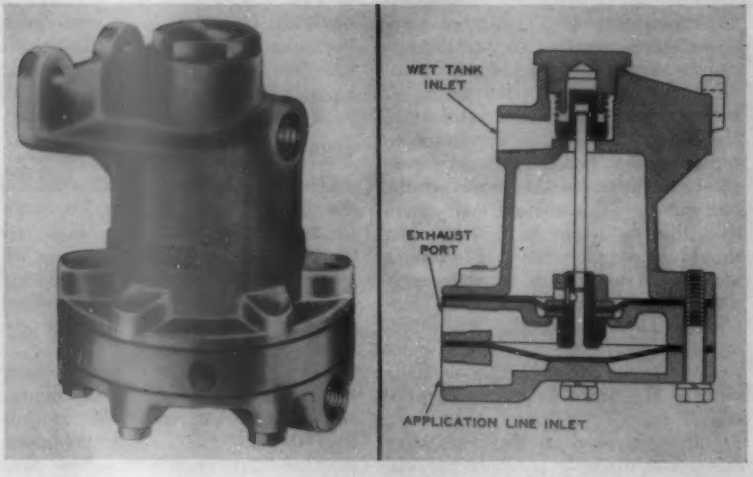
The Safetyliner chassis has big oversize brakes with Westinghouse power application. The engine is mounted on sliding sub-frame for easy removal for overhauls. The frame is 10⅛ in. deep and of 5/16 in. pressed steel channel sections. Additional features of the chassis include: floating springs; hydraulic clutch; tubular construction; synchromesh transmission; Teleflex controls; special throttle design; increased engine life; highest quality bearings and maneuverability. *Jay Madsen Eqpt. Co., Bath, N.Y.*

Stageway coaches . . .

. . . made of all steel construction have recently been announced.

The new coaches are available in 9, 12 and 15 passenger capacities, and have a double frame and safety glass throughout.

The 12-passenger model shown has the following features: 12 volt-electrical system; fuel pump pulsator; high capacity clutch; new easy-service master cylinder; new outrigger spring mounting; low speed, high capacity water pump; floating oil pump intake; brake dive control; gear type door hinges; Hotchkiss drive line and swing-type foot pedals. *Queen City Chevrolet Co., 6th & Sycamore, Cincinnati, Ohio.*



Moisture ejection valve . . .

. . . which automatically keeps air reservoirs clean and dry is available.

The new valve is said to eliminate completely the problems of moisture accumulation in air tanks. Operating in the 15 to 25 psi air pressure range, normal braking operates the valve without noticeable pressure drop.

Valve construction makes it impossible for working pressures to balance the valve in open position and dump reservoir pressure. The valve is connected to the air system by two air lines—one leading from the bottom of the air reservoir, the other from a brake application line. *Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.*

Automotive sander . . .

. . . said to be the lowest priced sander for all-around body repairs is now on the market.

Designed especially for sanding jobs, it also can be converted for wire brushing use. Another feature is that it can be suspended overhead from a balance reel, and used as an aerial sander. The side handle can be mounted either on the right or left side for maximum maneuverability.

Specifications of the sander are: AC-DC motor, 25 to 60 cycle, 115 v; free speed 4200 rpm, load speed 2520 rpm; heavy duty precision ball bearings and dimensions of 17 x 7 x 6. For additional information write *Mall Tool Company, Chicago, Ill.*

Glass fiber insulation . . .

. . . for heat control and sound absorption. A four-page folder on this product gives performance and conductivity charts for the material and describes uses for acoustical applications and air duct installation.

One section is devoted to the new Microlite acoustical baffle for industrial uses. Glass fibers produced by an exclusive "electronic extrusion" process are longer, more uniform, and virtually devoid of extraneous particles. Insulation made of these fibers features remarkable acoustical and thermal performance as well as light weight, high strength and high resiliency. *L.O.F. Glass Fiber Co., Toledo, Ohio.*

Disposable paper wipers...

. . . are now available in two different sizes. The No. 58 wipers consist of two-ply sheets that measure nine and five-eighths by ten and one-quarter inches. The No. 59 wipers measure nine and five eighths by thirteen and five eights inches.

Both sizes are being packaged in newly designed boxes, each containing 125 wipers. Each box has the special "pop-up" feature that makes another wiper automatically available. Each wiper consists of "Perf-Embossed" sheets, which through a special process, are welded together for extra durability. *Scott Paper Company, Chester, Pa.*

More What's New on Page 92

Industry In Review

Bus operators smile as . . .

Governor Signs NY Tax Relief Bill

• New York busmen have won some relief. The two per cent gross receipts tax they have been paying since 1937 has been decreased enough so that 93 per cent of the operators need no longer pay the tax. And the other seven per cent need only pay on revenues in excess of $500,000.

During the legislative session that recently ended, a bill providing exemption was passed and sent to Governor Averill Harriman, who signed it last month.

The governor's move was expected since it was he who initiated a special study of the problems of the bus industry. The study itself substantiated busmen's claims that relief was essential, and Harriman recommended that relief.

In previous years, both Governor Harriman and former Governor Dewey vetoed measures designed to grant similar relief. Harriman, in turning down the move last time, said that the revenues were already included in the budget, and that although relief was urgent it could not be granted then.

The tax dates back to 1937 when it was enacted for state public welfare purposes. It was then intended as a temporary emergency measure, but was extended each year until 1947 when it was made permanent.

Before its demise with the legislation enacted this year, the tax was directly or indirectly responsible for more than 90 bus firms going out of business over the past three and a half years. Many of the companies were operating at a loss, but were nevertheless required to pay the two per cent tax on gross receipts.

In his message to the legislature, Harriman said, "It is important to recognize that tax relief is only part of the solution to the plight of the bus industry. To achieve our objective, this reduction in the state tax should be supplemented by stronger local effort to provide a better operating environment for these companies. There must also be determined effort on the part of the companies themselves to improve their services and achieve operating economies."

Only last year another legislative enactment made it possible for villages and towns in the state to relieve their transit systems from a one per cent gross receipts tax. This, however, was small relief for most operators.

Greyhound Enters Contract With Cubana Airlines Co.

• The second step in Greyhound's program of diversification has been taken, with the announcement that the giant bus company will act as sales agent for Cubana Airlines.

Cubana is an international carrier that operates flights between Miami and Cuba . . . is scheduled to start operating non-stop between New York and Cuba this month.

Under the terms of the contract signed by R. J. O'Connor, Greyhound's VP in charge of sales and a representative of Cubana, the bus company will sell airline transportation through all its outlets in the United States.

Cubana was formerly a subsidiary of Pan American World Airways. It not only serves the U.S. and Cuba, but runs flights to Bermuda, Mexico City, the Antilles, the Azores, Portugal and Spain.

Twin to Sell One Plant

• One of its five plants will be sold by the Twin Coach Co. to Purolator Products of Rahway, N. J., manufacturer of filters. The plant being offered Purolator is currently being used for the building of specialized automotive vehicles and highway post offices.

Twin Coach will continue to operate its four other Kent, Ohio, plants, and will also maintain its general offices there. L. J. Fageol, president, scotched any rumors that the firm was planning to liquidate.

The price of the property and the terms of the sale were not announced when the agreement was made known.

PTC Faction Elects Woman Director

• An insurgent faction of the board of directors of the Philadelphia Transportation Co. has been successful in placing the first woman in the history of the company on the board.

Despite this fact, the present management was successful in getting seven of its eight candidates on the board. The only loss on the management slate was Dale W. Barratt, president of the Baltimore Transit Co.

The first woman on the board is Mrs. Thelma Beresin, who's associated with a Philadelphia public relations and advertising agency. She was on the slate of Joseph N. Janney, also a director, who opposed the election of Arthur M. Greenfield, chairman of the PTC executive committee and a noted financier.

Two other nominees on Janney's slate got only token support as most of the weight was thrown behind Mrs. Beresin.

There are 21 PTC directors, five of whom are named by the city. The other 16 are elected on a staggered basis, eight each year.

Detroit Street Railways Honks out Last Trolleys

• The last of the trolleys has run in the red-hot automobile town of Detroit. Clanging gave way to horn tooting as the Department of Street Railways operated its final streetcar up and down Woodward Avenue one last time.

In keeping with the spirit of the day, city officials led a parade in a specially decorated car, while music of 64 years ago was played. It was 64 years back that the city's first streetcar was run.

Buses are now operating on the lines previously served by trolleys.

MD's to Study Accidents

• Motor vehicle accidents, what causes them and what can be done to prevent them—all from the medical viewpoint—will be probed during a one-day symposium on "Medical Aspects of Motor Vehicle Accident Prevention" on May 23.

Meetings during the day will consist of panel workshops to be held at the New York University Bellevue Medical Center, while the evening meeting will be held at the New York Academy of Medicine.

On the conference committee, representing the bus industry, are Dr. Harold Branaleone, medical director for the Third Avenue Transit System, program chairman, and Merwyn A. Kraft, director of accident prevention for the American Transit Association.

Slogans as They Ride

• A French company is planning to introduce a new advertising device into Britain which, if it catches on, would have as a captive audience the millions who travel each day by bus, train or subway.

The company, Societe Stop Phone of Nice, has already taken out a British patent for the recording and announcing equipment known as the "stop phone."

The unit tells passengers the names of the stop at which they're arriving and also announces the name of the next one. Between stops, publicity slogans and advertising announcements are broadcast.

The device contains two recording ribbons linked to the wheels of the vehicle. It is claimed that the unit is so accurately synchronized that stops are announced "within a yard" irrespective of possible traffic jams.

Cost of the equipment for one vehicle is about $515.

Fleming Replaces Davis at VTC

• Walter K. Fleming, assistant manager of the Richmond Division of the Virginia Transit Co., has been named manager, replacing Lee F. Davis, who resigned to accept a post as vice president with the Central National Bank.

The announcement was made by K. A. Bradshaw, vice president and general manager of VTC.

Fleming began his transportation and traffic career in 1927 with Burton W. Marsh, a well-known firm of traffic engineers. He subsequently served as a consultant to a number of companies and in 1945 joined VTC as a traffic consultant. He was later named superintendent of traffic and schedules and in 1953 was appointed assistant manager at Richmond.

Davis first entered the transportation business with a rail line and later joined the Virginia Electric and Power Co. which operated a number of Virginia transit properties.

Davis was named director of claims and safety for Virginia Transit when it took over from the power company in 1945. Two years later he was appointed manager of the Richmond Division.

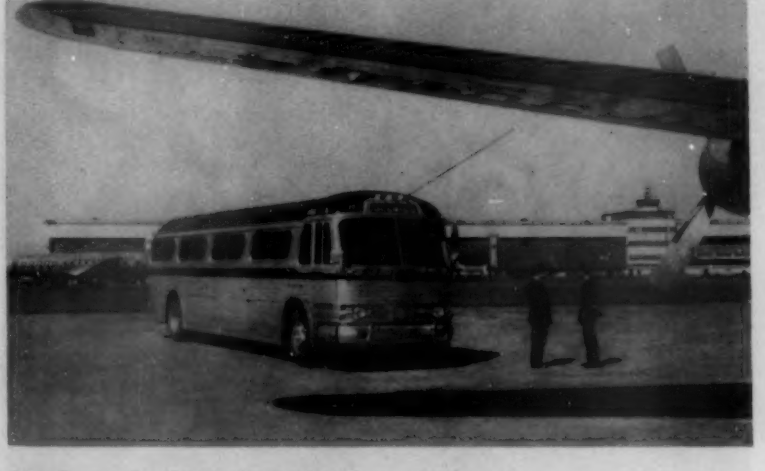
PBA Holds Spring Labor Session

• With more than 50 in attendance, the Pennsylvania Bus Association held its annual Spring Labor Session at the Holiday Motor Hotel, near Gettysburg, Pa.

In charge of the all-day session was W. J. MacReynolds, of the management consultant firm of MacReynolds, Lovitt & Walters.

A two-part morning program featured a presentation by S. E. Walters of the above mentioned firm, and a panel discussion moderated by MacReynolds. Panel participants were: James Evans Jr., Schuylkill Transit Co.; Stanley Ference, Ohio River Motor Coach Co.; Col. C. E. Patton, Wilkes-Barre Transit Co.; C. D. Smith, Schuylkill, and James W. Hagar, general counsel for PBA.

The afternoon session featured as principal speaker Joseph M. Gambatese, associate editor of the Nation's Business and former Washington news bureau representative for the McGraw-Hill Publishing Co. He discussed "What the AFL-CIO Merger Means to Business."



Modern Styling for Air Travelers

Passengers traveling to and from New York City airports may soon be riding in one of these deluxe buses of the Carey Transportation Co., which furnishes limousine service to the airports from downtown New York. The company has added four of these diesel powered coaches to its fleet. The coach, a GMC PD 4104, boasts the same features as its over-the-road brothers . . . tinted picture windows, reclining seats, air conditioning and air suspension springing

BTC, Employees End Dispute . . .

• Management and labor have gotten together in Baltimore. By a vote of 1,248 to 325 union members have agreed to a 2½-year pact previously worked out by company and union representatives.

The contract will run to the fall of 1958 . . . provides for an immediate boost of ten cents an hour, retroactive to Mar. 9 and two subsequent boosts of five cents each.

However, the contract requires that the 20-cent fare now being charged under state operation of the system be granted Baltimore Transit, instead of the old fare of 18 cents. The state raised the fare to guarantee a fair return to BTC and to insure the necessary income to meet wage hikes.

It was also reported that the contract provides for liberalized vacation benefits, but eliminates union demands for a funded pension plan.

Meanwhile, it was not known if the company would continue to press its court suit against the state. BTC hoped the court would rule the state seizure law unconstitutional. According to the state administraior, the agreement will end state seizure through proclamation.

The law that allowed seizure would nevertheless remain on the books until the next General Assembly meeting, when it could be either extended or allowed to die.

. . . Another Starts, Ends in Milwaukee

• As one dispute ended another started and ended in Milwaukee, where workers for the Milwaukee and Suburban Transport Co. nixed an 11th hour proposal and called a strike.

A two-year contract calling for a total of 16 cents an hour more was finally accepted by union representatives, who recommended that the rank and file approve it. Four previous proposals were turned down although each would have provided the same basic wage boost.

The company estimated that the increase would cost it $600,000 the first year . . . $1 million the second year. It was expected that further economies would not offset wage costs and that a fare increase would become necessary.

Member 100 Gets to Ride Free

Cincinnati Transit Co.'s Club Flyer started Jan. 1, 1955 with 67 members. Its membership has grown steadily, so that last month its 100th member signed up. To celebrate the event Mr. 100, James Flournoy, received a free membership at a special presentation staged by the company. Here Herbert L. Miller, CTC operations manager, presents Flournoy (left) with his membership card, while President J. P. Jones (right) looks on.

Bus Lines to Replace Subway

• To replace subway passenger service due to end June 30, Rochester Transit Corp. will set up a six mile Elmwood avenue crosstown bus line and two lines to serve employees of Rochester Products Division of General Motors.

The utility also will reroute two other bus lines and extend a third, William A. Lang, RTC president told a Civic Development Council committee. With existing bus service, the new setup either will cross all subway stations or pass very near them, with the farthest distance from any subway stop being .37 miles, Lang said.

Seattle Transit Gets New Pennants

• Seattle Transit System is now installing red pennants on the front of dime downtown shuttle service buses.

Lloyd P. Graber, STS manager, said the change from white to red was decided on because of a decline in patronage. The decline was attributed partly to routing changes required by one-way streets, and to failure of the white pennants to show up against the light roofs of the system's new color scheme.

ATC Drivers Agree to New Contract

• Bus Drivers and the Akron Transportation Co. have agreed on a new contract, ending the threat of a strike of employees.

The agreement, running until April 1, 1957, calls for:

- A five-cent hourly raise, retroactive to April 1.
- Another five-cent raise Oct. 1.
- A $5.75 company payment on insurance policies, bringing the monthly payment to $9.75.
- Vacation pay of $100 weekly.
- Assignment of two men to emergency work in the line department.
- The line department to do all teardown work on trolley wire.

This was the third time that ATC and its unions got together on settlement just in time to head off strikes.

Trolley Stands as Memorial

• Atlantic City's trolleys are gone but not forgotten. One of the last such vehicles to appear on the streets was taken after its retirement several months ago and given a place of honor at Northfield, N. J. There it will stand as a memorial to a local figure.

The conversion also marked the end of trolleys in the state.

Texas Firm's Tax Slashed

• Tax relief in a big way was recently granted the Galveston Transit Co. by that Texas city's governing body. Down from two per cent of gross receipts went the tax, to 0.2 per cent.

It was agreed that the lower figure would continue to be paid to assure Galveston Transit of refunds from the state for gasoline taxes.

The new low tax rate applies to only the first $50,000 a year after all operating expenses, which include income and all other taxes. GTC operates on a 93 per cent operating ratio.

Carolina Stages Returned

• Carolina Scenic Stages bus properties have been returned to the company under the terms of a federal court order. The firm had been involved in reorganization proceedings.

The order was contingent on payment by the company of attorneys' fees and settlement of other claims. It also required that Hamish Turner, president of the company, deposit $50,000 as a guarantee of compliance.

San Jose Extension Proposed

• A major addition to San Francisco's Bay area rapid transit system which would provide service to San Jose has been proposed. If the basic plan now under consideration is adopted along with this proposal, peninsula service would be extended south from Palo Alto to San Jose, with intermediate stations at Mountain View, Sunnyvale and Santa Clara.

The addition was suggested by John C. Beckett, chairman of the Bay Area Rapid Transit Committee . . . was originally included in the proposed second stage plan designed for operation by 1970.

PS Offers to Pay Tax

• The St. Louis Public Service Co. has offered to pay the city $731,000 in gross receipts taxes for last year if the city will guarantee that the money will be refunded if the tax is declared invalid.

Payment of the tax was due on April 1, but was withheld by the company, which filed suit in circuit court contesting the validity of the levy. The tax imposed by city ordinance is five per cent of the gross fares paid by passengers using buses within the city limits. The city, meanwhile, demands immediate payment.

NYTA Sees Future in Bus Industry

• The sale of New York City's bus properties to private operators has been in an on-again, off-again state for the past few years. And as matters stand now, it may be off-again—for a number of years.

According to Charles L. Patterson, chairman of the NYC Transit Authority, there is a good chance that surface lines could be turned into real money-makers in the next three years.

Crediting an improved maintenance program instituted by Col. James B. Edmunds, assistant general superintendent in charge of surface lines, Patterson said it was possible through a five-year, $50-million improvement program to replace completely the city's 2,200 buses with new vehicles.

At the same time, TA officials were heartened by a decline in riding far less than was anticipated. Nevertheless, it's expected that the surface lines will be $5 million in the red at year end, June 30.

As far as sale to private operators is concerned, numerous proposals have fallen through for one reason or another. Chief drawback has been the question of retaining the city's pension program for employees who were transferred.

Columbus Eyes Free-Ride Plan

• Columbus Transit Co. has shown interest in the "free ride" plan now being used in a 24-block area in downtown Toledo. It turned over to consulting firm of Simpson and Curtin a similar proposal made by Columbus' public utilities director and the traffic engineer.

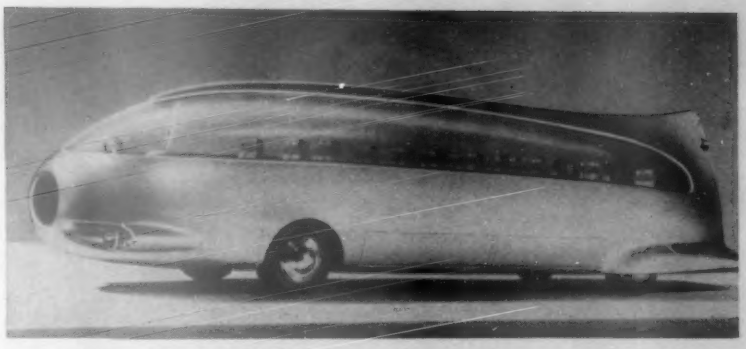
The free-ride suggestion was to be studied by the consulting firm at the same time it conducted a bus survey. However, a test of the use of express buses was delayed until the survey was finished.

In Toledo passengers may board a bus in the downtown area and leave it in the same area at no charge. Riders who go beyond the free-ride zone pay as they leave the bus.

Utilities director Ferd M. Pickens said that Toledo's plan indicates a 40 per cent time saving.

MTC Anticipates Four-Month Bus Parade

Within four months the Montreal Transportation Commission will be the proud owner of 250 brand new buses, the first of which is pictured above. MTC has ordered 25 GMC 50-passenger diesels, 50 Mack 50-passenger diesels and 175 Canadian Car & Foundry buses, 50 of them 50-passenger vehicles. The remaining 125 will seat 45 persons each. In the photo a workman is shown applying MTC's monogram to the first Cancar diesel delivered. The new buses will be used mostly on St. Catherine and Dorcester Boulevard routes.



The Golden Dolphin, could it be . . .

Italy's Answer to Tomorrow's Bus

• Bearing a remarkable resemblance to the sleek fish it was named after, Italy's "Golden Dolphin" which bowed in recently at the Geneva Salon, may give a few ideas to bus operators who are presently dreaming of a new super bus.

At first appearance, it seems that the Dolphin's creator, Dr. A. Viberti, president of the Turin firm that bears his name, was designing a dream car. But it is his opinion that such a vehicle will become standard, particularly for long-distance runs, in the next few years.

A cruising speed of 125 mph is envisioned for the vehicle, but only with a gas turbine engine and roads that are adequate. At present Fiat is experimenting with such an engine, but meanwhile trial runs will be made with a conventional piston engine.

Interior accommodations call for 18 individual swiveling and reclining seats for deluxe cruising, or for 32.

The vehicle is built entirely of plastic, without metal framing . . . will boast extreme lightness while maintaining the same strength, according to its designers.

Numerous innovations are planned besides standard features such as air conditioning.

Radio, TV Are on the Move

• Although no formal proposal has gone before the board of directors yet, electronic supervision of a large transit system may be on its way. As reported in last month's Top Topics, Cleveland Transit System has been conducting talks with manufacturers to discuss the project.

Radio communication between each vehicle and a central control point is the first aim of the planners, and they believe such a system is available today and could be set up at $3 to $5 per vehicle per month.

CTS believes it could save money as well as increase efficiency. Two-way hook-up would make possible trip-by-trip checks on such operational data as bus loads, traffic conditions, etc. The information would then have immediate value, unlike information turned in minutes, hours or days after observation by checkers.

The greatest change in operation, however, would be the replacement of corner supervisors by television cameras. With cameras located at check points, all observations could be made from one monitor station.

Tram Asks for Fare Increase

• To meet a 13 per cent decline in passengers in 1954 and also in 1955, the Denver Tramway Corp., has asked the Colorado Public Utilities Commission for authority to raise fares to 16 cents per trip. Current fare is 15 cents or four tokens for 55 cents.

Tramway in 1955 showed a net income of $489,888, its largest profit since 1952. But W. A. Alexander, Tram president, said it was still not near the amount "approved and allowed by the PUC." He said the regulatory body considers that $686,310 is a fair return on investment.

In its proposal, Tram asks that school or children's fare be upped from the present eight cents to ten cents and the token rate of two for 15 cents eliminated.

The company received its last fare boost in January 1954 when the rate went from 12 cents to the present cash and token rate. As a result, Alexander said, the firm went through two years "without any compensating revenue increase."

The firm last year slashed expenses $728,616 from the previous year.

The Fare Box

• Here is a spot-check of the current fare picture throughout the country. The following are those fare increases which have recently been requested or approved.

Increases Asked

Beaumont City Lines, Tex. • Asking a straight 15-cent for adults from two for 25 cents token fare. Children from five cents to 7½ cents.

Belleville-St. Louis Coach Co., Mo. • Asked permission to raise basic fares from 12 to 15 cents. Commuter books from ten rides for $1 to eight for $1.

Decatur City Lines, Ill. • Wants to raise its adult fare from 13 to 15 cents. Children five to 11 years from five to 10 cents, same for students.

Brainerd Bus Line, Minn. • Seeks an increase from 10 to 15 cents, or two tokens for 25 cents.

Co-operative Transit Co., W. Va. • Asked to increase its fares from Wheeling to Wheeling Island from 10 to 15 cents, with five-trip tickets for 55 cents.

Denver Tramway Corp., Colo. • Would like to eliminate the sale of tokens from four rides for 55 cents and charge a flat 16 cents per trip. Also to raise the school or children's fare from eight to 10 cents and do away with the two-for-15-cent token rate. Double the Shopper's Special price to 10 cents, and adjust certain interurban zone fares.

Gastonia Transit Co., N. C. • Seeks to raise fares from 10 to 12 cents.

Omaha Transit Co., Nebr. • Plans to raise its fare from 18 to 20 cents.

Peoria-Rockford Bus Co., Ill. • Requested a fare raise from 25 cents to 30 cents minimum, asked to base fares on a mileage rather than a point-to-point basis. Seeks 3 cents a mile for the first 50 miles, 2.5 cents for the second 50 miles and 2.2 cents for more than 100 miles.

Transcontinental Bus System • Asked increases between St. Louis, Alton and Chicago ranging from five to 50 cents.

Continued on page 92

Industry Briefs

Detroit Street Railways Commission has voted to give an estimated 200,000 pensioners and their wives half-fare transportation on city buses.

The ten-cent fare will apply only during off-peak hours . . . will be given a four-month trial period. Also, it will not apply to express buses on which the "senior citizens'" passport-type pass would not be accepted.

Experimental air conditioning may soon be tried out on two buses of the Dallas Transit Co. DTC is expected to place an order for $7,000 worth of equipment with Frigikar Corp. whose engineers feel they have conquered the problem of providing cool air to a vehicle whose doors open about 720 times a day, and within current operational costs.

Record high sales were reported for the first quarter of 1956 by Mack Trucks, Inc., last month. For the three months Mack sales hit over $60 million, or about 74 per cent over the $34½ million of the same quarter last year. Net earnings after taxes went from 75 cents to $1.27 per share.

One of the oldest names in transit, Fifth Avenue Coach, has been proposed for the firm's parent company, New York City Omnibus Corp.

Omnibus directors feel the current name leads to confusion among passengers who think the city runs the line . . . feel that Fifth Avenue Lines will be associated with courteous, dependable service.

In 1954 Omnibus acquired the Fifth Avenue Coach Co. which continues to use the same name.

A novel answer to Sao Paulo's transportation problems (for one problem see Mar. BT, p. 53) may be the *Papafilas* or "line eaters" being operated currently. The local government has purchased 50 trailer buses which, it's said, can hold between 200 and 250 people. So far, nine are being operated.

The trailers are being made locally. Standard tractor-trailer cabs are used for motive power.

Spring schedule changes have come in with Daylight Saving Time in the cities served by Eastern Greyhound Lines that adopt DST.

Schedules were made available to the public prior to the effective date, Apr. 29.

Official congratulations were given to 1,294 employees of the Montreal Transportation Commission last month by officers of MTC. The occasion? Each man had a perfect 1955 driving record.

Sunny Skies Mean Fewer Riders

• If there were ever a doubt that lost riders were finding their way into automobiles, recent snowstorms in Boston should dispel it.

The Metropolitan Transit Authority calculates that 120,000 more people were carried by the system on each day of the storms. MTA further figured out that if those poor weather riders used transit every day it would amount to additional revenue of $22,000 to $29,000 daily, or translated to annual income, enough revenue to meet $6 million in fixed charges that are now borne by the 14 towns comprising the transit district.

PTC Adds Fare Boxes at Subways

• Speedier service through speedier fare collection is the aim of the Philadelphia Transportation Co., which last month installed fare boxes at cashiers' windows along two subway lines.

Cashiers will not take fares, but will make change, sell tokens and collect and issue transfers. The passengers will drop the right amount, 20 cents, or a token in the boxes.

He's Glad; We're Sorry

• We've just lost an old and valued subscriber. For the past 30 years he has subscribed to BUS TRANSPORTATION. Recently when his three-year subscription was up for renewal this subscriber, whose name we withhold, wrote us as follows:

"Please do not renew my subscription. Over a year ago I got out of the bus business and into another line—and, for the first time in 30 years, I am happy."

In saying farewell to a longtime, faithful subscriber, we wish him every success in his new endeavor. We're sorry to lose him, but glad he's happy.

Looking Back: Suburban Service

Old No. 23 didn't have nearly the congestion that faces today's operators. As a result, it was probably able to maintain a pretty high rate of speed—for its day. But this old Royal is far outclassed by even the oldest running bus at DeCamp Bus Lines, which operated it. Then as now, DeCamp Lines served the bustling suburban area of New Jersey adjacent to New York City.

SIGNING IN is W. H. Scott, one-time manager of San Francisco Municipal Railway. Other delegates wait their turn.

FLOWER DISPLAY at Golden Gate Park greets ATA visitors who took scenic tour on Municipal Railway buses.

HAWAIIAN STYLE GREETING is extended Virgil Elliott, public service director for San Francisco's PUC.

ORCHIDS ADD an exotic touch to Hawiian luau which highlighted social activities at conference. President Thoma greets group.

ATA Men Meet in San Francisco

• "Urban transit is beginning to emerge from the isolation ward of municipal planning—it is no longer considered a thing apart."

This comment by the American Transit Association Executive Vice President George W. Anderson—along with similar remarks by other speakers—set an encouraging keynote for the ATA's Pacific Coast regional conference, held April 16-18 in San Francisco.

Said Anderson: growing public recognition of the need to include transit in city planning follows "a decade of almost single-handed fighting by transit to save itself and the downtown area."

"We have established why transit is important," he said. "Now we must explain to downtown groups what is needed and how we can solve the problem."

ATA President Roswell F. Thoma told the gathering he has noted increasing realization among civic leaders that transit is "vital to their continued success." He said the merchants whose customers come by transit and real estate operators whose investments are protected by good transit service should support the transit enterprise, even in absence of a direct return.

A major problem, Thoma said, is this: "Although regulated as a public utility, transit enjoys no monopoly . . . it can collect no standby or service charge as the user pays for telephone, gas or electric connections every month, whether he uses the service or not."

But Thomas advised de-emphasis of the problems of the industry. He favors the positive approach—picturing transit as a "constructive tool cities can use in a positive manner to alleviate traffic congestion, save millions in costs of new and altered facilities, and restore to city streets their proper function of moving people, instead of vehicles."

Thoma warned transit operators against describing their service as essential, then announcing it will be abandoned "unless we get our own way in all cases."

Needed, said Thoma, are: 1. vigorous and continued promotion efforts; 2. constant devotion to the search for improved methods and more economical management, and 3. an abiding sense of civic responsibility.

"Bus of the Future" was the subject of a talk by Jesse L. Haugh, president of Metropolitan Coach Lines, Los Angeles, and head of an industry committee on bus design improvement. "We're looking for these qualities," he said: A style that will last. Sweeping design that gives the impression of movement. A massive appearance below the window line, giving the feeling of security. More window area, providing light for reading. Originality in design of air vents,

Continued on page 96

Calendar of Events

A list of activities of interest to the bus industry

May

23-24 Indiana Bus Assn., Hotel Sheraton-Lincoln, Indianapolis, Ind.

June

14-16 Michigan Motor Bus Assn., Park Place Hotel, Traverse City, Michigan.

17-19 Pennsylvania Bus Assn., 35th Annual Meeting, Galen Hall, Wernersville, Pa.

18-19 North Carolina Bus Assn., Inc., Annual Convention, Barringer Hotel, Charlotte, N. C.

27 Tri-State Association, Irem Temple, Dallas, Penna.

27-30 New York State Motorbus Assn., annual summer meeting (four-day cruise).

September

12-14 National Association of Motor Bus Operators, Drake Hotel, Chicago, Illinois.

17-20 American Transit Association, Hotel Jefferson, St. Louis, Mo.

Accident Booklet Out

• The latest annual edition of Fatal Fallacies has been sent out by the Travelers Insurance Companies. Complete with cartoons playing up human driving foibles, the pamphlet also contains a wealth of statistical information on accidents.

Accident facts from every state are collected and analyzed in the booklet, which has been published each year since 1931.

Free Rides Continued

• Following a practice which started four years ago, the Yonkers Railroad Co. offered free rides to patrons attending church on Easter Sunday. Once again the honor system was used. Patrons only had to say "Going to church" or "Coming from church" to ride without cost.

At the same time, another time-honored YRC practice was continued. Wives and sweethearts of employees were given an Easter gift of boxes of chocolates.

Tacoma Leases System to City

• The Tacoma Transit Co. will lease all its physical assets to the city of Tacoma, Wash., and the city in turn will retain the company to operate the system, under a new arrangement expected to go into effect this month.

The arrangement is expected to save the company about $50,000 annually in gas, license and rubber taxes, making it possible to forestall possible fare increases and reduction of service which otherwise would have been necessary.

"It is high time that state and local governments got off the backs of the transit people and gave them a chance to operate out of the red," said Dr. Homer Humiston, chairman of the City Council committee which worked out the agreement with bus company officials, in outlining the plan. "If we don't they can't survive."

The company has been employee-owned for the past 18 months.

Honolulu Riders up over 1954

• Tourists and servicemen apparently helped Honolulu Rapid Transit Co. stop its 11-year long decline in passenger loads and show a slight upturn in 1955, the McGraw-Hill Pacific Coast News Bureau reports.

Adult fares were up 0.6 percent, school fares up 3.8 per cent.

The adult fare breakdown showed lines serving Waikiki and Pearl Harbor up 378,000 passengers over 1954, while the rest of the system dropped slightly—indicating tourists and servicemen provided the major boost.

HRT reported a profit for 1955 of $248,185 or $1.26 per common share. But unless there is a further increase in passengers, a fare increase will be necessary to maintain earnings said Edward M. deHarne, president.

$3 Million Order Placed

• A $3 million order for 128 buses has been reported by Mack Trucks, Inc. The vehicles will be placed in service by transit systems in Chicago and New York City.

The 100 buses ordered by the Chicago Transit Authority will be propane powered and will seat 49 passengers. The 28 vehicles ordered for New York by the Surface Transportation Corp. will have the Mack Thermodyne diesel . . . will seat 51. The latter order will be delivered starting this summer, while the Chicago order will begin in the fall.

Parking Ban Made Permanent

• An experiment that has banned parking in downtown Wilkes-Barre, Pa., has proved so successful in the past two months that the City Council has decided to make it permanent.

Although some changes will be made in designation of streets to be affected, the ban will remain pretty much as it was—no parking will be permitted between 7:30 and ten am. Autos parked in the restricted areas will be towed away and the owners will be fined.

The ban also applies to some streets during the evening rush hour.

Superior Sells in the Near East

The buses pictured above will play a vital part in carrying hundreds of thousands of Moslems on their annual religious pilgrimage to the holy city of Mecca. All told 250 Superior-built buses will be shipped to Saudi Arabia in time to transport pilgrims on the last leg of their journey. Similar shipments have already been made from Baltimore and New Orleans.

ABOUT PEOPLE . . .

W. W. Harris, vice-president and general manager of the Indianapolis Transit System Inc., has been elected executive director of the recently formed Indianapolis Civic Progress Association, Inc.

Thomas F. Riedy, president of the United Traction Company, Albany, N. Y., has been reelected general manager of the firm. He has been general manager since 1948 and president since 1953.

Leland T. Waters has been named a director of Des Moines Transit Company. He is a director, general manager and treasurer of the Boston, Worcester and New York Street Railway Company.

Walter A. Draper has been elected chairman emeritus of the Cincinnati Transit Company, retiring as active chairman of the board. The new title is in tribute to his 54 years of service with the firm.

Lloyd I. Miller has been elected as chairman of the board of directors of Cincinnati Transit Company. Since 1948 he has been an attorney and associate of A. Lepper & Company, stock brokers.

Charles S. Munson, chairman of the board of Air Reduction Company, Inc., has been elected to the board of directors of the Greyhound Corporation. He succeeds Robert Driscoll, who recently retired.

John C. Dexter has been promoted to the newly created position of sales promotion manager for the American Seating Company. With the firm since 1950, he was formerly folding chair product manager.

W. D. Kirkpatrick, vice-president and sales manager of the American Chain Division, American Chain and Cable Company, Inc., has retired after more than 41 years of service with the company.

William B. Ilko, administrative assistant for American Chain & Cable Company has been appointed sales manager of the chain division. Prior to joining the firm, he was with Simonds Abrasive Company.

John T. Murley, assistant to the president of Louisville Transit Company has been named general manager. He joined Louisville Railway Company, predecessor of the company, in 1950.

Walter K. Fleming has been named manager of the Richmond division of Virginia Transit Company. He was recently elected a director of Virginia Transit Company and Portsmouth Transit Company.

John J. Lee, executive vice president of Twin Coach Company has been elected to the board of directors. With the company since 1946, he is general manager of the firm's aircraft division plant.

Philip Henderson has been appointed manager of the uniform fabrics division of Metcalf Brothers. He has been in the textile industry for over 25 years and has worked in various management capacities.

Frank J. Wemhoff has been named as public relations manager for the Bryant division of Carrier Corporation. He had been public relations director for the Indianapolis Transit System since 1952.

F. G. Wilson has been appointed sales manager, automotive parts division, for Wagner Electric Corporation. Prior to his appointment, he had served in various capacities for the firm since 1935.

Robert W. Jones has been appointed as chief development engineer of the marine division of Fageol Products Company. With the Twin Coach Company since 1946, he formerly was director of service engineering.

Philip D. Moulton has been appointed general sales manager of the Van Norman Automotive Equipment Company. He has been affiliated with the company since 1929 and formerly was eastern sales manager.

Kenneth E. Keating has been named assistant to the sales manager of the AP Parts Corporation (Ohio). He joined the firm in 1953 as a sales correspondent.

Continued on next page

M. E. Moore has been re-elected as president of Transcontinental Bus System, Inc.

Other officers re-named: **C. B. Callaway,** vice president and general counsel; **T. S. Reece** and **A. J. Emory,** vice-presidents; and **T. L. Vaughn,** secretary.

Carl W. Fischer, commercial manager of the Pittsburgh Railways Company, has resigned, ending a 30 year career with the firm.

He is now establishing his own business.

T. George Walker, treasurer of the New York City Omnibus Corporation, died recently.

Fred Vanzo has been named manager of the Electric Auto-Lite Company's east central sales region.

C. E. Free, Jr., has been named to succeed **Darrel F. Peck** as manager of Salt Lake City Lines. He has been with the firm since 1934.

Raymond F. Leheney, president of the Los Angeles City Traffic Commision, died recently.

Watson B. Pierce has been promoted to the position of manager of the school products division of the American Seating Company.

William C. Weirath has been named assistant manager of commercial sales for General Tire and Rubber Company.

Hubert C. Tolford and **Robert L. Weeks** have been elected vice-presidents of California Transit Advertising, Inc.

James H. Maxwell, former president of the old Steubenville, East Liverpool and Beaver Valley Traction Company, died recently.

Edward E. Vonderahe, vice president of the Portland Traction Company, a subsidiary of Portland Transit Company, has been elected a director.

Other officers re-elected to the board: **Fred G. Stevenot,** president; **Charles C. Bowen,** vice president and treasurer; **H. T. Birr Jr.,** and **D. O. Hannaford.**

Edward P. Taylor, secretary and treasurer of Twin Coach Company has been elected a director.

Other officers re-elected: **F. R. Fageol,** chairman of the board; **L. J. Fageol,** president; **Alfred G. Wilson, C. W. Enyard, J. B. Burge** and **J. T. Myers.**

G. W. Hill has been appointed as western sales manager, automotive parts division for Wagner Electric Corporation.

Wilbur Duetsch has been named sales manager of the industrial lubrication department of Aro Equipment Corp.

David W. Palmlund has been retained by the New York Transit Authority as production and performance consultant.

J. R. Stokes has been named director of transportation for Great Lakes Greyhound Lines.

A. DeLoach Martin, Jr., has been elected to the board of directors of Galveston-Houston Company, parent company of Houston Transit Company, Galveston Transit Company, and Texas Bus Lines, Inc.

Alvin H. Gossard, president of the American Industrial Transit Company, died recently.

William C. Schluter has been elected president of the Western New York School Transportation Assn.

BUS AND TROLLEY BUS DELIVERIES

Motor Bus Deliveries	Number of Buses	Manufacturers	Model and Type	Seat
American Bus Co. (N.J.)	1	Flxible	228JT1-56-41IC	41
Arrow Line, The (R.I.)	1	Flxible	228JT1-56-41IC	41
Atlantic Greyhound Corp. (W.Va.)	7	GMC	PD-4501	45
Badger Coaches, Inc. (Wisc.)	2	GMC	PD-4104	41
Baltimore & Annapolis R. R. (Md.)	2	GMC	PD-4104	41
Baltimore Transit Co. (Md.)	30	GMC	TDH-5105	51
Brooks Bus Line (Ky.)	1	GMC	PD-4104	41
Caseyville Bus Lines Inc. (Ill.)	2	GMC	TDH-5106	51
Clifton Buses, Inc. (N.J.)	2	GMC	PD-4104	41
Crown Coach Co. (Mo.)	2	GMC	PD-4104	41
Dallas Transit Co. (Tex.)	1	Southern	S-50-DHC	49
Dept. of Street Rys, Detroit (Mich.)	119	GMC	TDH-5105	51
Eastern Greyhound Lines (Ohio)	14	GMC	PD-4501	45
Eastern Greyhound Lines (Ohio)	49	GMC	TDM-5108	51
Flint City Coach Lines (Mich.)	18	GMC	TDH-5105	51
Florida Greyhound Lines (Fla.)	3	GMC	PD-4501	45
Fort Worth Transit Co. (Tex.)	3	Southern	S-41-HF	41
Hill Bus Co. (N.J.)	5	GMC	TDM-5108	51
Hudson Bus Transportation Co., Inc. (N.J.)	2	GMC	PD-4104	41
Hudson Bus Transportation Co., Inc. (N.J.)	2	GMC	TDM-5108	51
Hudson Transit Lines, Inc. (N.J.)	3	GMC	PD-4104	41
Indian Trails Inc. (Mich.)	4	GMC	PD-4104	41
Jefferson Transportation Co. (Minn.)	4	GMC	PD-4104	41
Kansas Trails, Inc. (Kan.)	4	Flxible	228JT1-56-37IC	37
Kerrville Bus Co., Inc. (Tex.)	8	GMC	PD-4104	41
Lewis Bros. Stages (GMC)	2	GMC	PD-4104	41
Mayflower Coach Corp. (N.Y.)	1	GMC	PD-4104	41
Memphis Street Ray. Co. (Tenn.)	13	GMC	TDH-5105	51
Mo., Kansas and Okla. Coach Lines (Okla.)	6	GMC	PD-4104	41
North Jersey Transit (N.J.)	2	GMC	TDM-5108	51
Nueces Transportation Co. (Tex.)	1	GMC	PD-4104	41
Orange & Black Bus Lines Inc. (N.J.)	3	GMC	PD-4104	41
Orange & Black Bus Lines Inc. (N.J.)	2	GMC	TDM-5108	51
Pacific Greyhound Lines, Inc. (Calif.)	10	GMC	PD-4501	45
Pinehill-Kingston Bus Corp. (N.Y.)	1	GMC	PD-4104	41
Queen City Coach Co. (N.C.)	6	GMC	PD-4104	41
Queen City Coach Co. (N.C.)	2	Flxible	228JT1-56-37IC	45
Richmond Greyhound Lines, Inc. (Va.)	2	GMC	PD-4501	45
Rockland Coaches, Inc. (N.J.)	5	GMC	TDM-5108	51
Somerset Bus Co., Inc. (N.J.)	6	GMC	TDM-5108	51
Southeastern Greyhound Lines (Ky.)	9	GMC	PD-4501	45
Virginia Stage Lines, Inc. (Va.)	4	Flxible	228JT1-56-37IC	37
Virginia Stage Lines, Inc. (Va.)	3	GMC	PD-4104	41
Virginia Stage Lines, Inc. (Va.)	9	GMC	TDH-5105	51
Wolf Bus Lines (Pa.)	1	Fitzjohn	Road-Runner	41
Miscellaneous Deliveries				
Gray Line Motor Tours, Inc. (Pa.)	2	Fitzjohn	Road-Runner SS	41
Gray Line SS Co. (Wash.)	1	Beck	Skyliner	41
North Star Industries Corp. (Mich.)	4	GMC	PD-4104	41
St. Rose Convent (Wis.)	1	Fitzjohn	Road-Runner	37
Petersons' Garage & Auto Co. (Tex.)	2	Beck	Deck and Half	37
Xavier University of Louisiana (La.)	1	Flxible	228JT1-56-37IC	37
Foreign Deliveries				
Distribuidora de Omnibus Fitzjohn S.A. (Mex.)	1	Fitzjohn	Road-Runner	41
Gen. Mtrs. Overseas Operations Div. (N.Y.)	8	GMC	PD-4104	41
Gen. Mtrs. Products of Canada, Ltd. (Canada)	20	GMC	TDH-5105	51
Murray Hill Limousine Service (Quebec)	1	Fitzjohn	Road-Runner	37

Total deliveries reported in this issue..418

Note: This list is based on monthly reports from manufacturers. Not all manufacturers report regularly, consequently this list is not to be considered complete.

how GM Production Techniques lengthen vehicle life

Standard procedures on every GM Coach built today...

7-stage metal preparation CHECKS RUST... CORROSION.. also increases paint adhesion

Bonderizing of metal parts to prevent rust and corrosion is exclusive with GM in the bus industry, and contributes to longer vehicle life.

Before going into assemblies, all steel and all aluminum material—exterior panels, body posts, floor framings, etc., undergo a 7-stage procedure in which modern metallurgical chemistry renders the metal virtually immune to premature deterioration.

1. In the first stage, the material is cleaned and con-

Structural parts move by conveyor to first bonderizing stage, where alkali metal conditioning solution is sprayed on at high pressure, scouring off all dirt, grease, oxidized metal. Nozzles are positioned for maximum coverage from all angles.

(Below) Solutions are tested for concentration every hour by chemist. Temperature and pressure are also checked as all three factors affect quality of work.

Application of zinc phosphate produces a non-metallic, non-conducting coating which inhibits rust and corrosion, increases paint adhesion. Materials are untouched until the perfectly clean surface has received its protective sealer.

(Below) All coach hardware — nuts, bolts, washers, clips, fasteners, rivets, etc., are zinc-plated to prevent rust and corrosion.

ditioned with alkali solution, removing all dirt, grease and other foreign material.

2. Further application of alkali solution in more concentrated form results in a slight etching action on metal for better bonding.

3. Hot water rinsing under high pressure renders the material both physically and chemically clean.

4. Bonderizing with zinc phosphate converts aluminum or steel surface to a non-metallic phosphate coating which inhibits rust and corrosion, and forms a non-conducting bond between base metal and paint. (Actually, a porous surface is created, whose crystalline structure permits the paint to lock itself around the phosphate molecules.)

5. High pressure cold rinsing removes all undeposited chemicals.

6. Acidulated rinse with chromic acid provides acidic surface for best paint adhesion, also preventing blush rusting before prime coat.

7. Metals are then dried in a gas-fired oven at 275 degrees, followed by prime coat of iron oxide in the case of steel, and zinc chromate for aluminum.

Inside surfaces of roof and side panels are sprayed with Asphalt asbestos compound, which keeps condensed moisture from attacking the metal, and is also a sound deadener.

(Below) Liquid rust preventative is poured in and then drained out, leaving a protective coating on interior walls of steel Air Suspension beams.

Assembly completed, coach exteriors are "flash" primed with iron oxide, followed by successive coats of enamel applied by workmen in traveling spray booth. Evacuation of all dust particles and overspray by high capacity blowers insures a smooth, dust-free, high gloss finish.

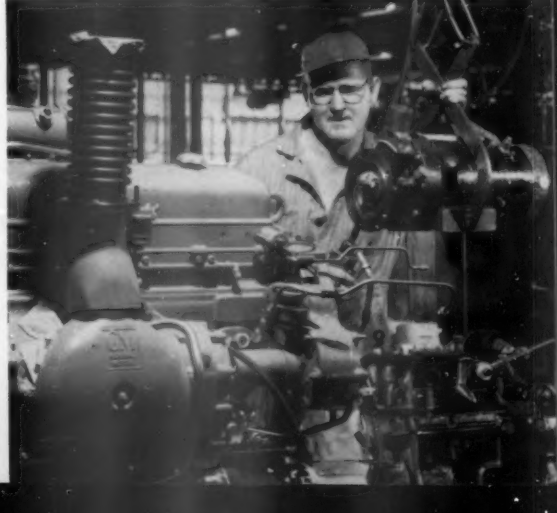
Zinc chromate sealing compound, applied to all overlapping seams of exterior panels, waterproofs the coach body, seals against dust, eliminates noisy metal-to-metal contact, and prevents electrolytic action of dissimilar metals.

Since 1948, lightweight extruded aluminum alloy channel posts have been used successfully in body construction.

Heavy aluminum foil sheets are placed for added insulation in roof and body sides.

Heavy duty copper tubing used in heating system has full body slip joint soldered connections.

All engine accessories are gear driven—there are no belts, cables, chains to fray, stretch or break.



LONG STRUCTURAL LIFE
with Aluminum Body Posts

Longer life and therefore higher sustained value is the result of the various operations described on these pages.

This is proved by the excellent prices GM coaches command in the used bus market, where they consistently return better than book value to the operator.

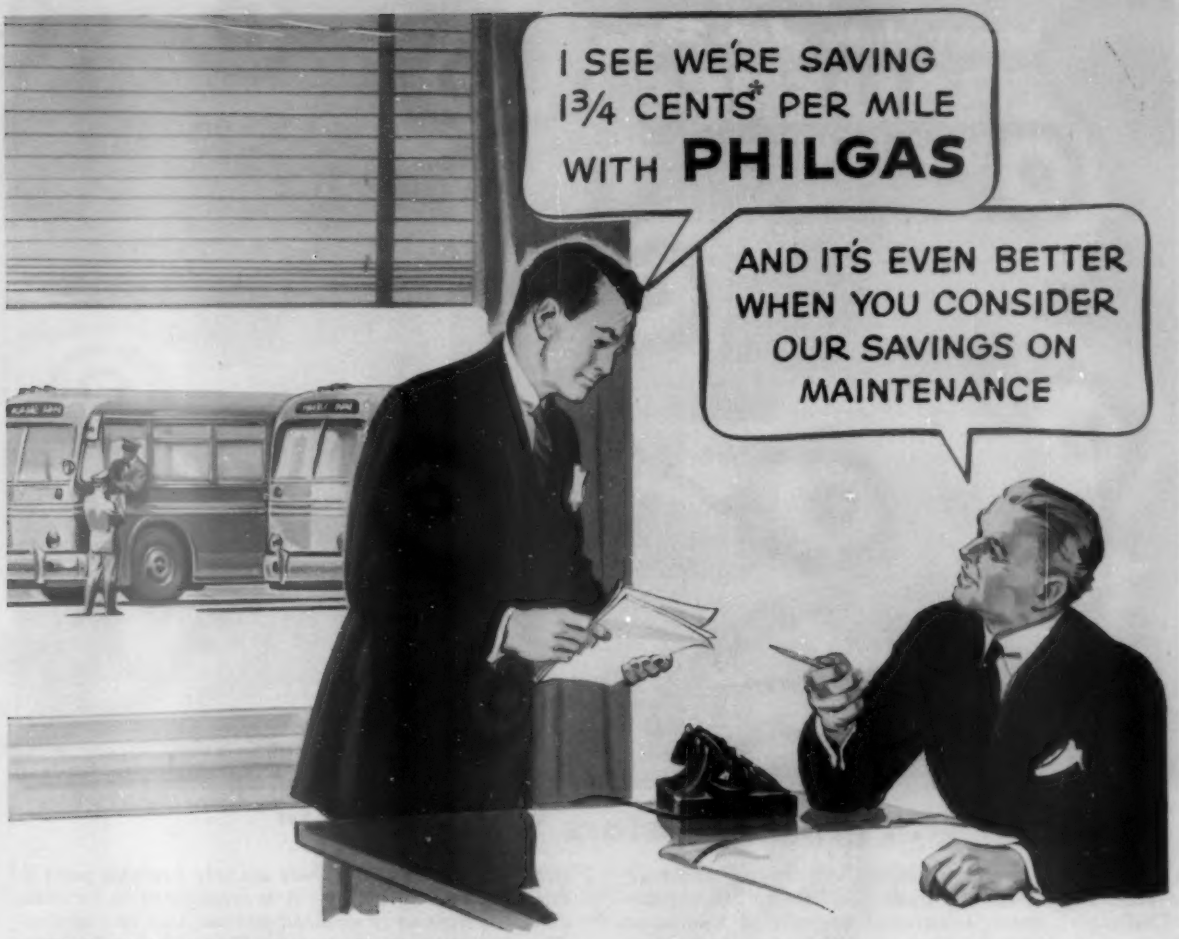
In fact, so good is the market for used GM equipment that there is actually a shortage today!

Contrast this with other makes of coaches, which often go begging for buyers, even at sacrifice prices.

GM COACH

GMC TRUCK-COACH DIVISION
GENERAL MOTORS CORPORATION

PRINTED IN U.S.A.



Figures from coach company operating in city stop-and-go traffic and intercity long hauls, as well. Full details sent on request.

From all over the country come reports of savings with Philgas® as a motor fuel. Fleet owners who have run side-by-side tests, comparing Philgas cost and performance with other fuels, have converted their entire fleets. Find out how much you can save with Philgas.

Check These Philgas Advantages

- ✓ Burns completely with no oil dilution —less contamination.
- ✓ Low fuel cost—lowers operating costs.
- ✓ No cylinder wall washing—lowers cylinder wear.
- ✓ Longer ring and valve life.
- ✓ Cuts maintenance costs—thousands of miles more before overhaul.
- ✓ Quieter, no knocking—no smelly fumes or exhaust smoke.

Phillips 66 Philgas
THE ALL-PURPOSE FUEL

Philgas is our name for high quality LP-Gas—Bottled Gas—Butane—Propane.

PHILLIPS PETROLEUM COMPANY

SALES DEPARTMENT, *Bartlesville, Oklahoma*

Offices in:

AMARILLO, TEX.—*First Nat'l Bank Bldg.*
ATLANTA, GA.—*1428 West Peachtree Street*
CHICAGO, ILL.—*7 South Dearborn St.*
DENVER, COLO.—*1375 Kearney Ave.*
DES MOINES, IOWA—*606 Hubbell Bldg.*
HOUSTON, TEX.—*1020 E. Holcombe Blvd.*
INDIANAPOLIS, IND.—*1112 N. Pennsylvania St.*
KANSAS CITY, MO.—*500 West 39th St.*
MINNEAPOLIS, MINN.—*212 Sixth St. South*
NEW YORK, N. Y.—*80 Broadway*
OMAHA, NEB.—*WOW Building*
RALEIGH, N. C.—*804 St. Mary's Ave.*
SALT LAKE CITY, UTAH—*68 South Main*
ST. LOUIS, MO.—*4251 Lindell Blvd.*
TAMPA, FLA.—*1214 South Dale Mabry*
TULSA, OKLA.—*1708 Utica Square*
WICHITA, KAN.—*501 KFH Building*

heavy-duty *AIR-Push*

CHALLENGER

Windshield Wiper Motors

. . . the operators "best friend"

Clear vision is a must to insure safe driving under all weather and present day traffic conditions. The popular "Challenger" motor, constructed basically of aluminum, is especially adapted for use on vehicles with large glass windshield areas, such as, urban, city and inter-city model busses, as well as most of the late model trucks with the larger windshield area. There are only 4 moving parts in this revolutionary motor. It is constructed to facilitate quick maintenance in mounted position. Low air consumption at a wide range of pressures. Control Valves for automatically controlled speed, pressure and parking, if desired. Long-life arms and blades insure trouble free service.

Crown

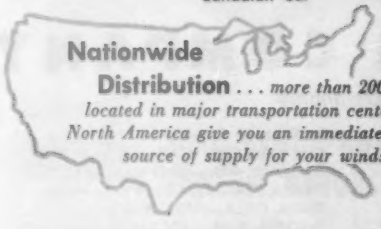
White

Diamond T

Canadian Car

. . . here are just a few of the leading manufacturers using Air-Push Windshield Wiping equipment on their latest models.

If you have not tried Air-Push Windshield Wiper motors on your fleets, we urge you to "investigate BEFORE you invest." PROVEN PERFORMANCE, attested to by users all over the country, has established the "Challenger" as a leader in heavy duty vision equipment. Wiper failures cause loss of time, equipment damage and disappointed customers.



Distribution . . . *more than 200 distributors located in major transportation centers throughout North America give you an immediate, convenient source of supply for your windshield wiper needs.*

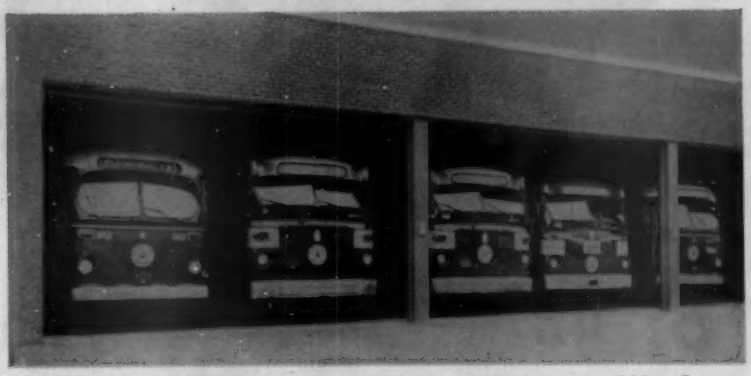
Write Today for more specific information! There is a heavy duty Air-Push Motor for *every* requirement. **KITS FOR EASY CONVERSION** are available for *all* trucks and busses.

Sprague DEVICES, INC.

Michigan City, Indiana

3,500,000 miles a year of clean engine operation on Gulflube H.D.!

Robert Wallace (left) Gulf Sales Engineer and Harold Eick, Maintenance Superintendent, discuss operating problems as they make a spot check in the terminal garage of the Somerset Bus Co. at Mountainside, New Jersey.



A few of the 53 Somerset buses which operate in the state of New Jersey. This company, organized in 1925, is now one of the largest independent operators in the state.

Harold Eick of the Somerset Bus Company in Mountainside, New Jersey, is an enthusiastic booster of Gulflube H.D. Mr. Eick has a few words to say about this fine product:

"I've had a lot of experience with motor oils and, believe me, it's Gulflube H.D. as far as I'm concerned! It really keeps our engines running clean and I notice there's a lot less gumming of the oil filters. The oil screens don't clog up, either, and the relief valves no longer stick.This motor oil has sure relieved me of a lot of headaches, and I wouldn't use anything else."

Superior lubrication

Try Gulflube H.D. in your fleet. This rugged motor oil has been specifically engineered to furnish proper protection for automotive internal combustion engines—both gasoline and Diesel—in heavy-duty service.

The strong oil film of Gulflube H.D. insures superior lubrication under severe operating conditions. Because it is a high-quality detergent oil, rings stay clean and free, insuring better compression and proper oil control. And oil consumption is held to rock-bottom levels.

Find out how Gulflube Motor Oil H.D. can help reduce maintenance costs. Your telephone directory will tell you where to contact your Gulf office, so you can have a Gulf Sales Engineer call. He'll be glad to discuss your operation and review your maintenance problems.

Gulf Oil Corporation GULF **Gulf Refining Company**

The finest petroleum products for all your needs

Get performance
WITH
AC
SPARK
PLUGS
AC
GM
GENERAL
MOTORS
AC HOT TIP SPARK PLUGS DELIVER

and economy for your fleet
AC COMMERCIAL SPARK PLUGS!

You have to deliver the goods to maintain a profitable fleet operation. That's why you'll like AC Hot Tip Spark Plugs – they deliver the goods when it comes to mile after mile of peak performance and reliability! They're specially designed for today's higher-horsepower, higher-compression truck engines.

Here's how the exclusive *balanced heat* features of AC Spark Plugs can better the balance sheet of your fleet. *Balanced heat* provides proper heat range for a particular application . . . highway transport or city delivery. Two exclusive AC features – Conducta-seal and Hot Tip – hold heat where it's most useful . . . in the famous AC Hot Tip! That's *balanced heat* that gives longer plug life, higher plug efficiency!

When you standardize on AC Commercial Spark Plugs – as so many fleet operators are doing – you'll discover that they deliver the goods in performance, reliability and durability!

AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

Watch WIDE WIDE WORLD and BIG TOWN • NBC-TV

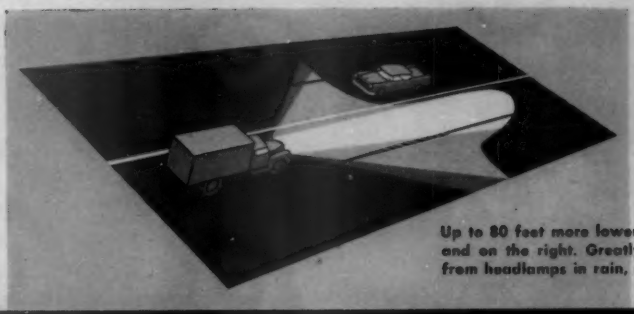
THE GOODS!

Three guide points for big

Special Guide T-3 Truck Headlamp Aimers slip over the three precision-ground guide points. Then, with only a screwdriver, and in daylight without lights on, you can accurately aim Guide T-3 Headlamps in less than ten minutes.

AC

CALL YOUR REGULAR SUPPLIER OR YOUR



Up to 80 feet more lower-beam light forward and on the right. Greatly reduced glare-back from headlamps in rain, snow and fog.

rigs that roll in the night!

NEW GUIDE T-3 Safety-Aim HEADLAMPS

Guide developed the T-3 Truck Headlamps and Aiming System which insure More Light—Aimed Right, Loaded or Light!

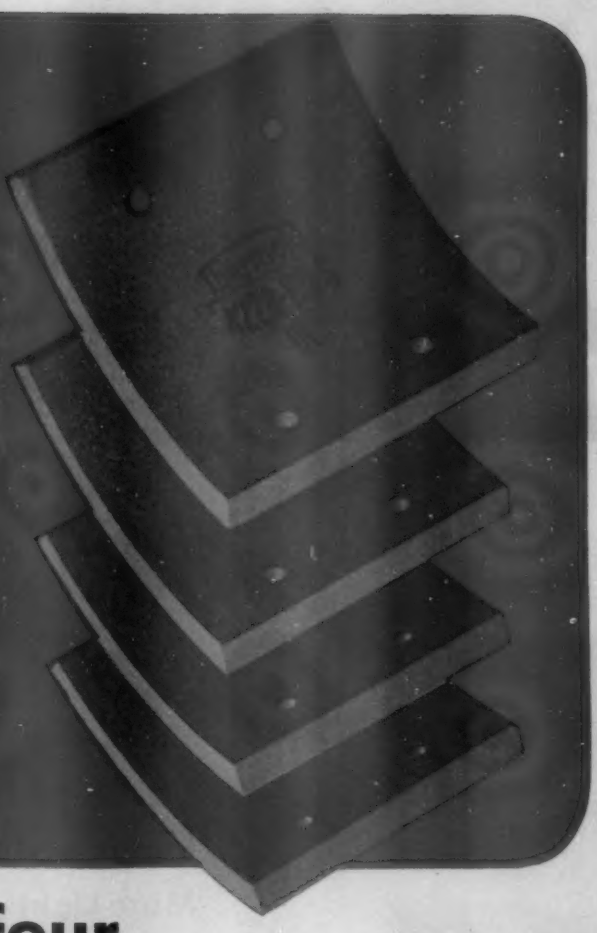
Thanks to Guide you can now have much better road illumination for fleet units that roll by night. Good visibility, much improved over earlier standards, has been engineered into these new Guide T-3 Safety-Aim Headlamps. Equally important, Guide has built into the lens face of these headlamps a precision-ground three-point plane that is scientifically related to the lamp's beam axis so daylight aiming can be quickly and easily accomplished.

Special T-3 Truck Aimers (only $18.95 per pair) are specially calibrated for truck use. To adjust lamps vertically only, as when a unit runs light at times—loaded at times, a very simple adjustment can be made rapidly by the driver. To get the full protection of more light—aimed right, standardize on the Guide T-3 Headlamp Safety-Aiming system.

Watch WIDE WIDE WORLD and BIG TOWN on NBC-TV

AUTHORIZED Guide HEADLAMP SOURCE

• SAFE STOPS
• NO FADING
• LONG LIFE
• CONSISTENT ACTION



. . . you'll get all four with Thermoid

Keep your fleet rolling with these superior quality Thermoid Products:

Pre-Stretched Fan Belts, BT Heavy Duty Radiator Hose and the new Thermoid Air Brake Diaphragm

Thermoid Heavy Duty Hydraulic Brake Fluid and Hydraulic Brake Parts

Whether your fleet high-balls along the expressways or crawls through congested stop-and-go city traffic . . . you'll get maximum safety at minimum cost per mile when you use Thermoid Brake Blocks.

Regardless of operating temperatures or weather conditions, Thermoid Brake Blocks perform evenly and consistently—exceed the most rigid stopping tests.

Thermoid

Thermoid Company • Trenton, New Jersey

Du Pont "DULUX" enamel on Green Bus fleet

stays bright through salt and sand

Mr. Julius Smith, Vice-President and Purchasing Officer likes the way that "Dulux" stays bright . . . orders it for all refinishing; specifies it on all new buses.

Mr. A. Plumser, Superintendent of Maintenance, gets fast, reliable performance with "Dulux" Enamel. He finds that it keeps buses out of the paint shop and on the road.

Sixty million Green Bus riders *can* be wrong—if they judge this fleet by its appearance and think it leads a pampered life.

The big buses serve Jamaica, Idlewild International Airport, the Rockaway Beaches and much of Long Island—rolling 6 million miles a year through wind-blown sand and ocean salt air. But you'd never guess it from the way "Dulux" Enamel keeps its sparkling brilliance on this 200-unit fleet.

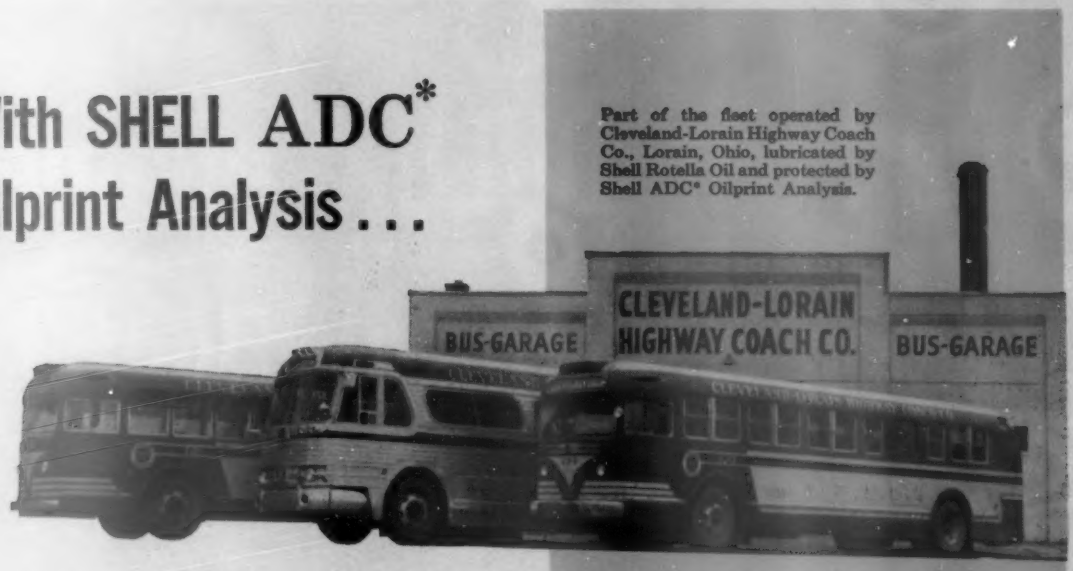
"'Dulux' has proven to be the most economical finish," according to the Green Bus Lines, "because of its toughness, durability and color retention." They find it "reduces costs and time in the paint shop"—vital with their peak year-round operating conditions. And like other operators, they know they can *rely* on "Dulux" for smooth flow-out and hard dry.

So, if you want to give buses sparkling "passenger appeal," even in severe service, take a tip from Green Bus Lines, and keep your fleet looking its best with Du Pont "Dulux" Enamel. E. I. du Pont de Nemours & Co. (Inc.), Refinish Sales, Wilmington 98, Delaware.

DU PONT **DULUX**® **enamel**

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

With SHELL ADC* Oilprint Analysis...



Part of the fleet operated by Cleveland-Lorain Highway Coach Co., Lorain, Ohio, lubricated by Shell Rotella Oil and protected by Shell ADC* Oilprint Analysis.

"Extended oil drain intervals... lower repair costs"

HERE'S ANOTHER transportation company that has found the Shell ADC* Oilprint Analysis a cost-saving tool of preventive maintenance. By its use, oil drain intervals have been extended safely on some new diesel coaches.

Furthermore this fast, reliable oil check has revealed many potential troubles in advance, such as oil contamination due to block fracture . . . in time to save costly repair bills. The Cleveland-Lorain Highway Coach Co. is enthusiastic about it.

The Shell ADC Oilprint Analysis enables fleet operators to test crankcase oil in the short time allotted for re-fueling and crankcase oil checks . . . mere *minutes*. It eliminates draining still-good oil and the risk of using oils loaded with contaminants.

Let us demonstrate how we can put this new cost-saving PM tool to work for you.

*Trademark

One Drop tells the Story!

The operator places just one drop of oil on the card. Analysis gives conclusive check of oil's condition.

SHELL OIL COMPANY

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SHELL

SOLEX®

the best glass under the sun

DRIVERS LIKE IT

"I drive safer with Solex windows" says Driver W. B. Busbee, Southern Trailways, Macon, Ga.

"Solex in my bus cuts down the glare and heat," says Mr. Busbee. "I feel comfortable and relaxed, even on hot, bright days. To tell the truth, Solex makes my job easier. Makes me a safer driver because I don't get so bushed."

AND SO DO PASSENGERS

"I can watch the scenery better through those green windows" says Mrs. John Best, Phoenix City, Ala.

"I never have to squint when I ride in busses with the green glass," Mrs. Best told us. "The color makes me feel cool and comfortable. One reason why I take the bus is to see the countryside—so I like to go on a bus that has Solex windows."

HERE'S WHY

Solex keeps the bus cooler—absorbs up to 50% of the total solar heat.

Solex shuts out glare—admits 70% to 75% of the total solar light, but reduces glare substantially.

With Solex in your bus ...
Drivers are more relaxed, less on edge—drive more safely. Passengers are more comfortable—more likely to travel by bus again.

These are good reasons for getting Solex in your new busses, and to replace the glass in your present equipment with Solex.

You can get Solex in Pittsburgh's Duplate® and Duolite® Safety Glass as well as in Herculite® Tempered Glass. For more information write to the Pittsburgh Plate Glass Company, Room 6171, 632 Fort Duquesne Boulevard, Pittsburgh 22, Pa.

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PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

8-126

"practically no maintenance cost in over 200,000 miles use with

Wagner Rotary Air Compressors"

says: Larry Bachman, Superintendent of Maintenance
Asbury Park-New York Transit Corp., Keyport, N. J.

If costly compressor maintenance has been a problem for you, follow the advice of leading bus operators, like Asbury Park-New York Transit Corp., and depend on Wagner Rotary Air Compressors. For it's a *proven fact* that these compressor units last longer with a minimum of maintenance and provide an adequate air pressure reserve for safe, sure stopping.

Field checks and factory tests further show that Wagner Rotary Air Compressors build up air pressure quickly, eliminate heat in discharge lines, stop carbon formation in air lines and valves, and substantially reduce friction loss and fire hazard.

Wagner Rotary Air Compressors are standard in all Wagner Air Brake Systems. These complete systems may be specified as original equipment on new vehicles. Wagner Compressors and a complete selection of Wagner Air Brake Components are available for easy installation on your present vehicles. Included is the new Wagner Moisture Ejection Valve especially designed to keep air tanks clean and moisture free. It is fully automatic and will not "freeze up" in open position. Minimizes the time delay sometimes encountered in building up air pressure during cold weather.

Send today for your free copy of Wagner Bulletin KU-201—it tells the whole detailed story on complete Wagner Air Brakes. There is no obligation, of course.

Asbury Park-New York Transit Corp.
De Luxe Motor Coach Service

Wagner Electric Corporation
6400 Plymouth Avenue
St. Louis 14, Missouri

Gentlemen:

Recently we had an opportunity to check back and analyze the performance of Wagner Rotary Air Compressors that are installed on our buses. The report showed that these compressors have given us very satisfactory and dependable service — an important factor when you consider that our route of operation is through the area with the heaviest vehicle traffic in the world.

We were also able to determine that we've had practically no maintenance cost in over 200,000 miles use with Wagner Rotary Air Compressors. In fact, at the time of this report, one of the compressors had been in service 302,543 miles. We feel this certainly speaks well for your compressors.

Sincerely yours,
Larry Bachman
Larry Bachman
Superintendent of Maintenance

LB/ac

NOTHING BEATS THE CONTROLLED SAFETY PROTECTION OF COMPLETE WAGNER AIR BRAKES

Wagner Electric Corporation
6461 PLYMOUTH AVENUE • ST. LOUIS 14, MO., U. S. A.
(Branches in Principal Cities in U. S. and in Canada)

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID... HoRol... CoMoX BRAKE LINING... AIR BRAKES... TACHOGRAPHS... ELECTRIC MOTORS... TRANSFORMERS... INDUSTRIAL BRAKES

K56-A

TUBE OR TUBELESS...

Most flats SIGNAL before they happen

On the highway the simplest flat takes costly time to change. Yet most flats give ample warning for you to catch them in the shop. Air pressures, gauged daily, instantly give the signal. An unusual pressure drop means there's a flat in the making. This advance notice of punctures or slow leaks means you fix flats in the shop where it costs you much less than on the road.

Certify the accuracy of your gauging-inflating equipment with Schrader 8106B Trutest Special Gauge, and inspect all tires with Schrader Service Gauges. Schrader Chucks, Couplers, Chuck Gauges and Accessories help air lines operate faster and better. And always specify genuine Schrader Tire Valves, Cores and Sealing Caps which are guaranteed airtight even at 250 pounds pressure!

Schrader Products important to best tire maintenance

Service package of 100 Schrader 880 Caps

Service package of 100 Schrader 4000 Cores

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TER YEAR
PACKARD BATTERY CABLE
Exclusive extra features at no extra cost make replacement easier and deliver top electrical performance.

FOREMOST BUILDER OF AUTOMOTIVE WIRING

Cable...

FIRST AGAIN*

WINNERS OF "BUS TRANSPORTATION" AWARDS FOR 1955

MORE AWARD WINNERS USE PACKARD CABLE THAN ANY OTHER MAKE

Yes, again this year it's the same story . . . users of Packard Cable win most of the "Bus Transportation" awards. These operators have found, as you will, that Packard cable's exceptional resistance to heat, oil, chemicals, abrasion, weather and aging gives them more miles between cable replacements at lower cost per mile. To enjoy the same benefits, start today to re-equip all your vehicles with longer lasting Packard cable, the first choice of automotive engineers. See your Packard jobber.

- PACKARD CABLE WILL GIVE YOU LOWER REPLACEMENT COSTS PER THOUSAND MILES OF OPERATION . . .
  Packard cable is built to resist all deteriorating conditions *longer!*
- THE PACKARD CABLE LINE IS COMPLETE . . .
  Everything you need in cable from one source in a completely packaged line!
- THE PACKARD CABLE LINE GIVES YOU EXTRA QUALITY YET COSTS YOU NO MORE . . .
  Because Packard leads the industry in engineering, in production!
- PACKARD IS THE WORLD'S LARGEST MAKER OF ORIGINAL EQUIPMENT CABLE . . .
  Factory-installed on more cars, trucks and buses than all others combined.

PACKARD LOW-TENSION CABLE Stranded copper conductor covered with tough insulation of Packard "404" plastic. Compact, highly flexible and wear resistant.

PACKARD TELEVISION-RADIO SUPPRESSOR IGNITION CABLE This Packard exclusive suppresses radio and TV interference and is original equipment on millions of vehicles.

PACKARD ENGINE COMPARTMENT CABLE An exclusive Packard development made with special insulation to withstand heat, fuel oil vapors, steam and cleaning compounds.

PACKARD SUPER-DUTY CABLE Designed for extra rugged duty. Special Packard insulation is engineered to withstand the most severe road and weather conditions anywhere.

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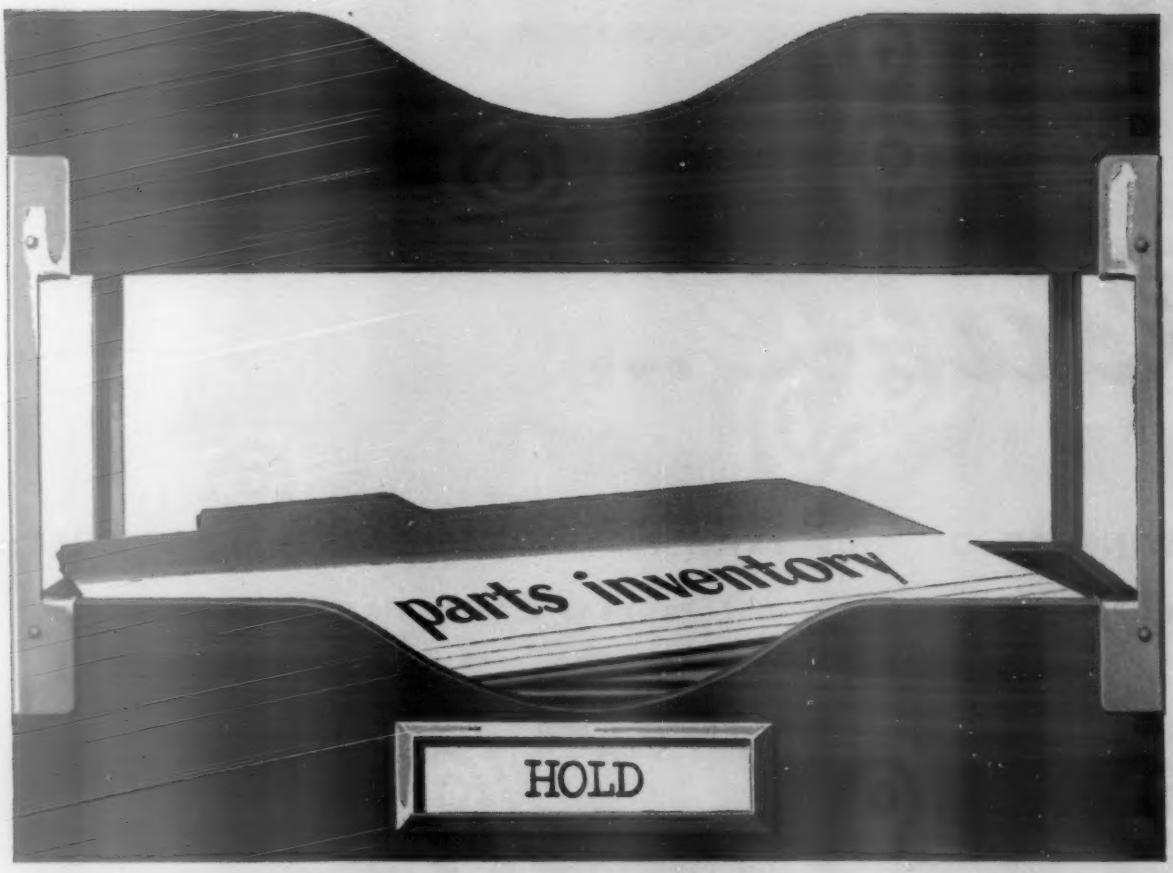

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Your UMS Distributor maintains large stocks of fast-moving parts—General Motors parts. In fact, the same parts that are used as original equipment on a large percentage of the nation's trucks, buses, and cars. These are all well-known parts with proved performance records.

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Wherever you are, you're close to a United Motors Distributor. He knows the answers to many fleet problems that can help you save time and money.

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will give you lower cost-per-mile

Yes, you will have lower operating costs because of the quality, uniformity and performance of these famous Raybestos products • **Brake Blocks** • **PGT Sets** • **Clutch Facings** • **V Drive Plates** • **Fan Belts** • **Radiator Hose.** To learn more about the savings Raybestos can give you, ask your Jobber Salesman about the unique Raybestos Fleet Engineering Plan.

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RAYBESTOS-MANHATTAN, INC., Brake Linings • Brake Blocks • Clutch Facings • Fan Belts • Radiator Hose • Industrial Rubber, Engineered Plastic, and Sintered Metal Products • Rubber Covered Equipment • Asbestos Textiles • Laundry Pads and Covers • Packings • Abrasive and Diamond Wheels • Bowling Balls

ASK FOR DELCO-REMY MODEL 1117657—THE GENERATOR THAT HANDLES THE TOUGH JOBS—WITH EASE!

This Delco-Remy 12-volt generator—Model 1117657—is the heart of an A.C.-D.C. charging system designed specifically for buses with continuous and extremely heavy electrical loads. It has a low cut-in speed of about 550 rpm, a curb-idle output of 130 amp., and a maximum output of 180 amp. at approximately 2000 rpm. Physically, it is rugged yet extremely low in weight for such a tremendous output. With its matching regulator and rectifier, Model 1117657 will give you all the power a modern bus can use—alternating current for fluorescent lighting, plenty of direct current for other electrical equipment. Specify Delco-Remy A.C.-D.C. charging systems for your buses. They're typical of Delco-Remy leadership in the automotive electrical field.

GM GENERAL MOTORS

GENERAL MOTORS LEADS THE WAY—STARTING WITH

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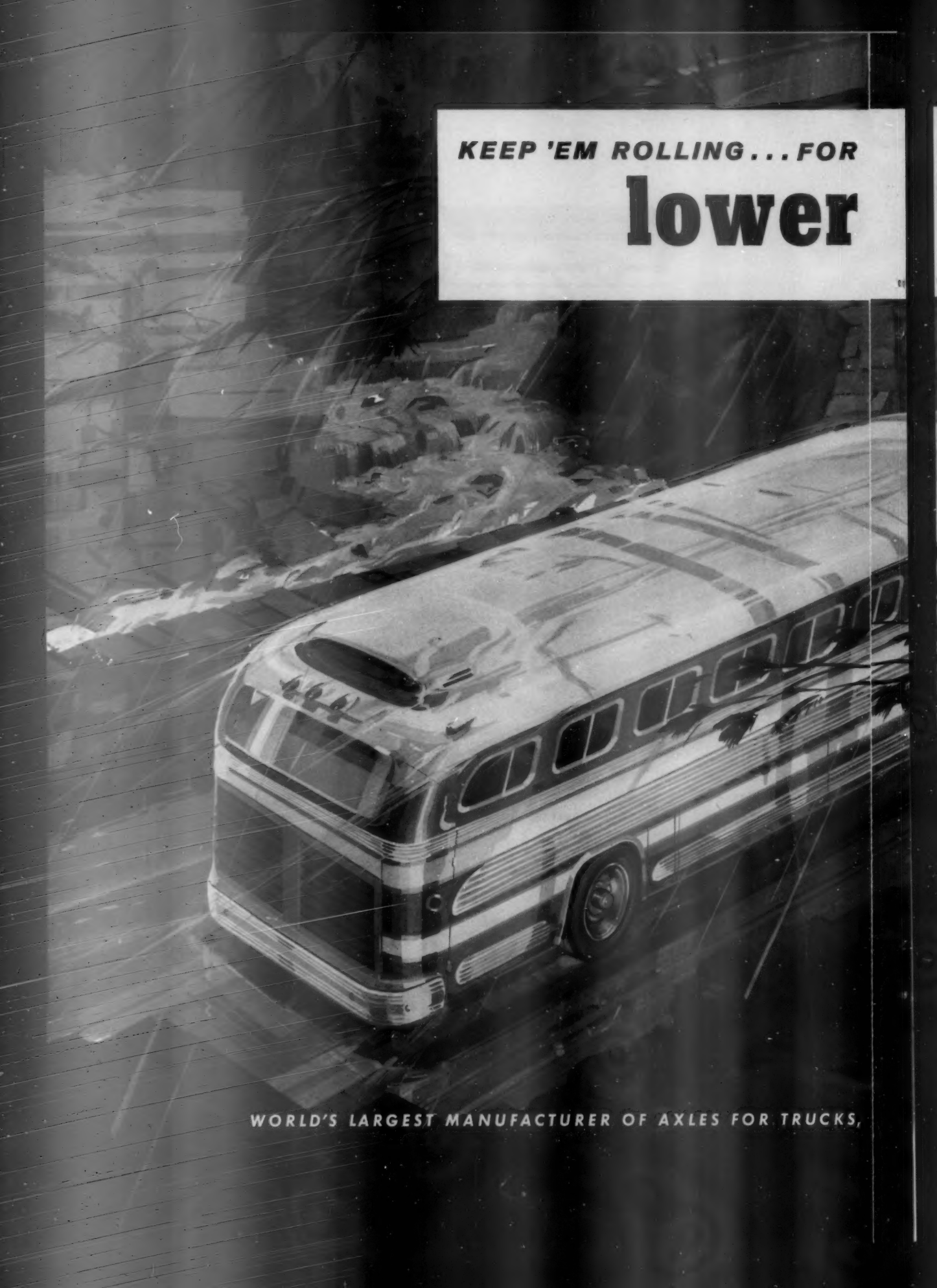
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WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS,

operating costs!

BUSES AND TRAILERS

Uninterrupted operation is the key to success in the transit field. That's why Timken-Detroit® Axles and Brakes are specified for over 90% of all motor buses.

Huskier equipment, specially designed for the transit field. This is the Timken® way of assuring longer, trouble-free operation. *Dependability* is the one quality prized above all others in bus equipment. And more than anything else, Timken-Detroit axles and brakes hold maintenance to a minimum . . . operate far longer under the most arduous conditions.

Years of experience as the world's largest manufacturer of bus axles have taught Timken the exacting needs of this industry. Timken axles and heavy duty brakes are designed to give the utmost in service, safety and dependability. Spindles are tough and husky. Bearings are large, long-lasting. Torsion flow axle shafts and rugged hubs and drums further guard against breakdown.

It pays to specify TDA® axles in your original equipment and genuine Timken-Detroit parts for your service requirements. Every part is torture-tested and built under rigid supervision.

TIMKEN *Detroit* AXLES

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ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

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Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York
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Maintenance Records got you going Round in Circles?

Socony Mobil's new P.M. System cuts paper work— helps keep your units humming!

Simple . . . accurate . . . easy-to-follow — that's Socony Mobil's new Preventive Maintenance System! It cuts paper work to the bone... practically eliminates breakdowns due to improper lubrication maintenance... helps reduce maintenance costs.

You work with only three things— work sheet, record folder, control blackboard. We supply record folders and work sheets...show you how to use them, help set up the entire system.

We also analyze your fleet conditions, help you set up lubrication schedules and inspection periods, provide skilled lubrication engineers when necessary, report on benefits achieved.

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Call your Socony Mobil representative for complete details.

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MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

THE SHORTAGE OF SCIENTISTS AND ENGINEERS:

How Critical Is It?

The United States is running into a serious shortage of scientists and engineers. There is no novelty in this observation. It has often been made in the last few years. And there has been mounting alarm about what this shortage may mean for both our national security and our prosperity.

There would be great novelty, however, if general agreement were attained on such important matters as the size of the shortage, the extent of the damage it threatens to inflict, and the best ways to eliminate it. The purpose of these editorials is not to provide this novelty, but to ventilate some of the key aspects of the shortage of scientists and engineers.

This first editorial in the series is designed to throw light on the over-all dimensions of the shortage. Others to follow will be addressed to such questions as:

- How serious is the threat to our economic well-being and to our national security?
- What needs to be done to prevent the shortage from becoming critical?

Rise Has Been Rapid

The problem is *not* that we have been producing a small number of engineers and scientists. Indeed, the number has risen sharply. We now have a working force of more than 600,000 engineers, over twice as many as the 286,000 there were in 1940. And we have about 250,000 scientists (chemists, physicists, biologists, geologists, mathematicians, etc.), compared to only 92,000 in 1940. About one in 148 persons in the labor force of 1940 was a scientist or engineer; today the ratio is about one in every 80.

In research and development work, where highly creative scientific minds are required, there has been fully as rapid a rise in employment of scientists and engineers. Fewer than 90,000 were employed in research and development fifteen years ago; the total now exceeds 200,000.

—But Not Rapid Enough

Despite this rapid increase in the number of scientists and engineers—at a rate much faster than the increase in the labor force as a whole—the needs of industry, government and education for technically trained people have risen even more sharply.

The principal reason for this mounting demand is the prodigious growth of research in the last 15 years. From a total of only about $900 million spent on all types of research in 1941, the annual expenditure rose to over $5 billion by 1953 (the latest estimate available). Over two-thirds of the research is done by private industry, mostly to develop new and better products and to find new and better methods of production. Most of the rest is performed by the government, largely to develop improved and inevitably more complex scientific weapons.

One aircraft company has found from its own experience that it required 17,000 engineering manhours to develop a typical fighter plane in 1940. The requirement is now about 1.4 million engineering manhours. Development of the typical fighter plane of 1960 will require well over 2 million engineering manhours.

In this dramatic example, the need for engineering services for a basic piece of military equipment soared 80 times in 15 years. It is an indication of why the demand for more and more technically trained men and women has outstripped even the imposing increase in scientific and engineering manpower of the last decade and a half.

Size of the Gap

Exactly how great the gap is between the available supply of scientists and engineers and the number required, it is impossible to say. In some instances technical talent undoubtedly could be better used than it is now. And part of the shortage might "disappear" if higher salaries had to be paid. (These questions will be discussed in later editorials.) But informed estimates of the approximate size of the gap can be given.

- According to the best available information, from estimates by the Engineers' Joint Council and the U. S. Bureau of Labor Statistics, **the minimum need for engineers from graduating classes is 40,000 each year for the next ten years.** Last year we graduated only 23,000 engineers, just about enough to cover replacement needs without allowing for any expansion of the number of active engineers. Projections made by the U. S. Office of Education indicate that we shall probably not have a class of 40,000—the *current* annual requirement—until 1963.
- According to Dr. Howard Meyerhoff, executive director of the Scientific Manpower Commission, **there is now a shortage of about 20,000 scientists.** Last year the number of doctoral degrees in the natural sciences, almost a prerequisite for research work, was only 5,000. Dr. Meyerhoff estimates that the shortage of scientists will rise another 30,000 by 1960.

More Needed As Teachers

Not all of the graduates with scientific and engineering training, furthermore, will work as scientists and engineers—that is, by performing research and giving it practical application. Such training is now necessary in many sales and management positions. And more of our technically trained men and women must remain in educational institutions as teachers if the quality of engineering and scientific education is to be maintained. A survey in 1954-55 by the National Education Association showed that, out of 277 universities, state colleges and large private colleges, nearly one-third *already* had unfilled vacancies in engineering and three-fourths had vacancies in physical sciences.

The dimensions of the shortage of scientists and engineers can be summarized as follows: **Despite a substantial rise in the trained manpower available, the needs of industry, the government and education have risen still faster. The best information indicates that, on the basis of current and anticipated needs, our recent yearly rates of production of slightly over 20,000 engineers and about 5,000 PhD's in natural sciences could be doubled without closing the gap entirely.**

The disturbing implications of this shortage for our national security and our prosperity and some practical suggestions for eliminating it will be the subjects of subsequent editorials in this series.

This is one of a series of editorials prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

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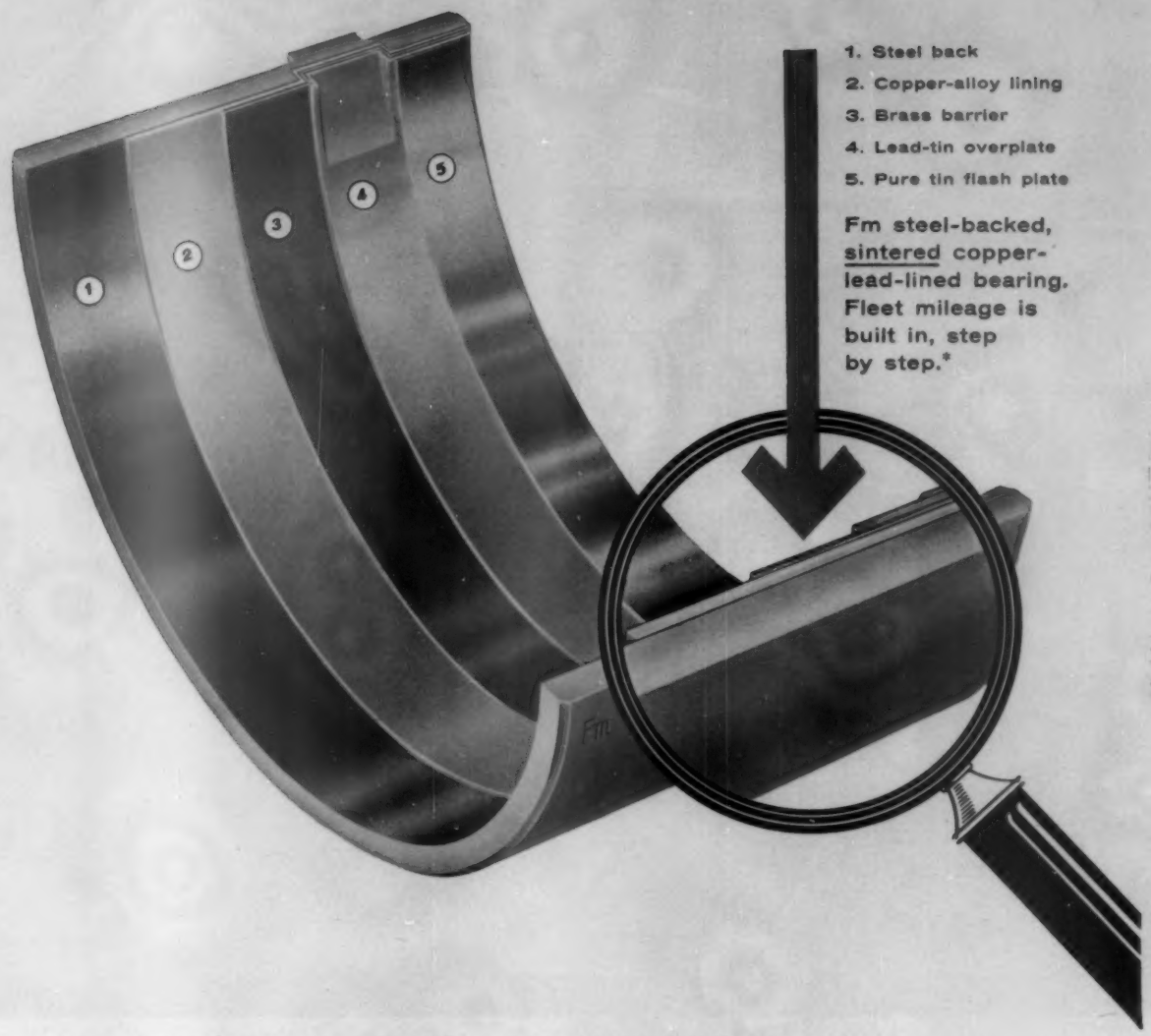

Look under the surface to see what puts mileage into the Fm Sintered copper-lead bearing!

*The big step toward maximum fleet mileage is Fm's sintered copper-lead bearing lining. Through the wonders of powder metallurgy, you get the strength of copper . . . the "softness" of lead . . . *in perfect balance!*

In this Fm bearing, a brass "barrier" assures lining stability. A lead-tin overplate assists break-in. A final, flash plating of pure tin adds corrosion resistance.

Each of these steps is engineered for fleet service—to provide maximum engine bearing mileage. Ask your jobber—he has complete stocks of Fm sintered copper-lead bearings. He provides *fast* service!

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Division of Federal-Mogul-Bower Bearings, Inc.

Fleet BEARING FEDERAL Mogul SERVICE *Mileage*

GET IT FROM YOUR JOBBER

Less Down Time and Lower Maintenance Costs

PROVED BY 2-MILLION-MILE, 25-MONTH ROAD TEST!

Let's talk shop. You want less down time, lower service costs in your fleet operation. And you know from experience that top-quality products can pay for themselves in more efficient and economical operation.

Take Auto-Lite Sta-ful Batteries, for example. They're America's fastest selling premium batteries and for very good reasons. An actual road test that covered over two million miles of driving proved they're the finest batteries money can buy. Read the results of that test on the opposite page; then put them in your own fleet units. You'll save service time because Auto-Lite Sta-ful Batteries, with 3 times the liquid reserve of ordinary batteries, need water only ⅓ as often. And they last longer, too!

FLASH! Full power always on hand when you stock AUTO-LITE Sta-ful Dry Charged Batteries

Dry Charged Auto-Lite Sta-ful Batteries are factory fresh and ready for use when you need them most. That's why more and more fleets are carrying a reserve stock of Dry Charged Auto-Lite Sta-ful Batteries for convenience as well as emergency use. No trickle charging is required during storage . . . and it takes only minutes to prepare the battery for use.

At full strength when installed

Only when ready for use does your service department add the "Activite" which makes them literally factory-fresh, full of power and ready for long, dependable service.

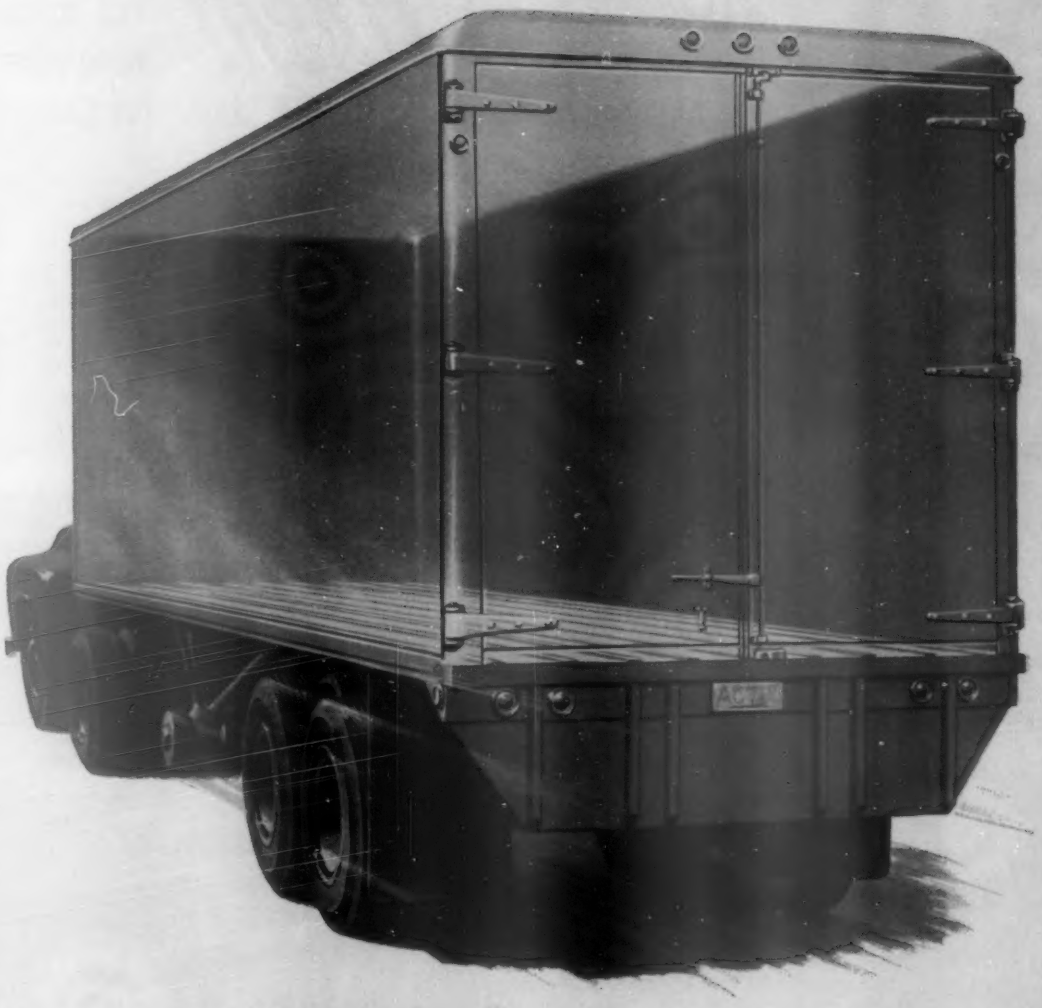
Check these amazing results that prove Sta-ful superiority

Here are the results of the 2-million-mile road test conducted in all types of weather and over all types of terrain:

- 9 out of 10 batteries subjected to this test needed water only two times a year, and none needed water more than three times a year.
- Of the 100 batteries tested, not one failed.
- At the end of 25 months of service, over 95% of the batteries exceeded the initial cold discharge voltage requirement of a new battery.
- Over 81% exceeded the initial cold capacity requirement of a new battery.
- Over 66% exceeded the initial 20-hour discharge requirement of a new battery.

AUTO-LITE sta-ful

Needs water only 1/3 as often



DEADHEADING *can cost double!*

It's an obvious fact that your trucks can't make money with no payload aboard. They can't make money when they are in the shop either!

Keep your buses or trucks on the road. Keep them earning their keep. You can hold repairs, repair time and repair costs to a minimum with AC Oil Filters to protect your engines from excessive wear under all driving conditions.

Why not get this superior filter protection in your vehicles? Assure yourself of lower maintenance costs with AC Oil Filters . . . available from your regular AC supplier.

Be sure you get these AC advantages:

1. Removes particles as small as 1/100,000 inch
2. Won't remove detergents from heavy-duty oil
3. Resists harmful acids, gasoline and water
4. Has triple the dirt-storage capacity of ordinary depth types

Filter Type S-2

Element Type P-117

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NBC-TV

AC OIL FILTERS

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AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

For 24 consecutive years Blackhawk is the

MOST PREFERRED JACK LINE among Bus Maintenance Award Winners

Here's the "Jack Box Score" that really spells out the reasons why — for twenty-four years in a row — Blackhawk Jacks have been the "Number One" choice of shops receiving Bus Maintenance efficiency awards. It's a feature-by-feature comparison that puts it right up to you. If you want the right jack for every job . . . the jack with unequaled stamina to handle bigger loads, and greater lifting spans . . . the jack with longer, low-cost life and trouble-free performance . . . the jack preferred above all others . . . then you want a *Blackhawk*. Tell *that* to your nearest automotive distributor!

HERE'S WHY BLACKHAWK IS FIRST CHOICE	Blackhawk	LINE X	LINE Z
MACHINED STEEL PUMP HOUSING — Guarantees longer life because pump cups operate within a smooth micro-finish steel cylinder (NOT in a hole bored in the base casting). Pump-on-side design allows load to center on base.	YES	NO	NO
MALLEABLE IRON TOP CAP—Greater strength to withstand off-center loading — gives rigidity to entire jack — prevents leakage.	YES	NO	YES
CROSS-MILLED HEAT-TREATED SADDLE — A safe, sure grip on greasy, icy axles. Teeth stay sharp as a hound's tooth — never wear smooth like ordinary saddles.	YES	NO	NO
REPLACEABLE PUMP ASSEMBLY—The parts that get the most wear. Complete cost only $2.06 — quickly replaced in the field with ordinary wrench. (Pump not part of costly base casting.)	YES	NO	NO
68% INTERCHANGEABILITY OF WORKING PARTS — Applies to all models 1½ to 20 tons. Lower maintenance costs, faster service if repairs become necessary.	YES	NO	NO

WORLD'S LARGEST MANUFACTURERS OF HYDRAULIC TOOLS

BLACKHAWK

BLACKHAWK MFG. CO., DEPT. J-1256, MILWAUKEE, WISCONSIN

Consulting Dept.

Continued from page 39

Average life of a Stewart-Warner unit in our service is 55,000 miles. Main cause of trouble with this unit is due to rusting and corrosion of the body due to fact that it is mounted where salt, slush and water are splashed onto it. Average life of an AC gasoline fuel pump on our property is 30,000. Chief trouble is damage to valve and valve seats caused by dirt and grit in fuel. In our experience performance of the Autopulse has not been satisfactory and maintenance is excessive.

W. E. Davis, Supt. Eqpt., The Cleveland Transit System.

The Transit Authority operates two types of electric fuel pumps; no recent experience with mechanical types. Carter is superior from standpoint of performance and reliability. Mileage per pump is well over 100,000 miles for the Carter units and around 35,000 for the Autopulse Triplex type units. These two makes of pumps are replaced at approximately those mileages.

H. Feldman, Asst. Genl. Supt., New York City Transit Authority.

Carter fuel pumps are changed at approximately 50,000 miles. Failures are caused by condensate in fuel tank. Autopulse pumps of dual type are used on Flxible Airporters. Changes are made at about 30,000 miles.

H. A. Grenert, Supt. Eqpt., The Green Line.

We changed to electric fuel pumps several years ago when vapor lock caused failures with mechanical type units. We use factory rebuilt pumps and these are replaced at inspection time. Little or no maintenance is required other than inspection. However, we were weak in this respect in 1955 and had three failures due to sulfated wires. Two road failures resulted from these failures. In 1955 six Stewart-Warner units were replaced in 343,003 miles of service and ten Autopulse units in 562,233 miles. Obviously performance of the two makes is so closely matched that we use both. Autopulse pumps were standard equipment on our last order of buses.

R. W. Collins, Supt. Maint., Mass. Northeastern Trans. Co.

We prefer electric pumps. On Autopulse we get about 30,000 miles before replacement. Carter units are still in service after 180,000 miles.

R. D. Strang, Supt. Maint., Waukegan-North Chicago Transit Co.

The Fare Box . . .

Continued from page 52

Increases Granted

Baltimore Transit Co., Md. • Granted a temporary increase from 18 to 20 cents. Express and limited stop buses to 25 cents for adults and 15 cents for children.

Bibb Transit Co., Ga. • Raised its token fares from four for 45 cents to five for 65 cents and increased school tokens from 10 for 75 cents to 10 for $1.

City Bus Company, Okla. • Granted an increase from 10 to 15 cents.

Duke Power Co., N. C. • Adult fares in Durham raised from 10 to 15 cents.

East St. Louis City Lines, Mo. • Increased fares from 13 to 15 cents with students' and children's fares from five to 10 cents. Students' and children's tokens may be sold at four for 30 cents.

Erie Coach Co., Pa. • Boosted cash fares from 15 to 20 cents and will initiate the sales of five tokens for 90 cents. Children's fare raised from seven to 10 cents with school tickets at 10 for $1 instead of ten for 70 cents.

Eastern Massachusetts St. Railway Mass. • Has been given approval to raise its basic zone fare from 15 to 20 cents.

Glendale City Lines, Calif. • Increased from 15 to 17 cents on first zone cash fare and from five to six cents on additional zone rates. Children's fare from 10 to 12 cents with 40-ride books for school children from $1 to $1.40. Tokens from eight to seven for $1.

McComb City Lines, Miss. • Granted an increase from 10 to 15 cents.

Virginia Dare Transp. Co., N. C. • Fares to range from 2.75 cents per mile to five cents per mile, depending on the route. Former fares were from 2.5 to 2.75 cents per mile.

Anderson City Lines, Ind. • Straight 15 cents will be paid instead of token rate of four for 50 cents. Pupils will pay ten cents.

MOBILPAGE

BUS PUBLIC ADDRESS SYSTEMS

- LOW INITIAL COST
- SIMPLE INSTALLATION
- GUARANTEED 1 FULL YEAR

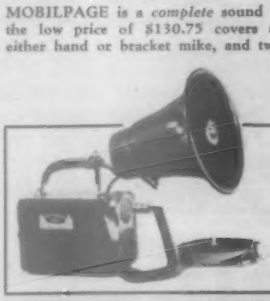
MOBILPAGE—America's finest sound equipment for sightseeing, charter, and school buses now available for immediate delivery. MOBILPAGE is specifically designed for vehicular applications. It is rugged and dependable beyond belief. Absolutely guaranteed for one full year.

MOBILPAGE is a *complete* sound system—the low price of $130.75 covers amplifier, either hand or bracket mike, and two highly efficient speakers. Can be installed in an hour . . . no technician required.

"100" SERIES

MOBILPAGE is used by more sightseeing companies than all other systems combined. Four hundred in service without a failure. For example, every sightseeing vehicle in Chicago uses MOBILPAGE. In New York City over 65 systems are in service.

MOBILPAGE guarantees you trouble-free operation. Do as hundreds of other sightseeing operators have done . . . switch to MOBILPAGE while delivery is still good. End sound system troubles forever.



"600" SERIES

For the occasional tour or charter vehicle, order our completely portable MOBILPAGE "600" system. Requires no hookup to battery. Can be carried by lecturer on factory field trips . . . weight is only 11 pounds. The "600" uses no tubes. Amazing performance. Only $94.50 complete.

MIDWEST AUDIO SERVICES PARK RIDGE ILLINOIS

WHAT'S NEW

Continued from page 47

Double spindle brake drum lathe . . .

. . . is now in production. The lathe simultaneously bores brake drums on one spindle and turns brake linings on the other spindle. Linings are automatically turned to the exact diameter of the newly refaced drums.

Formerly built by Wadell Equipment Co., Garwood, N. J. the Transfermatic was included in the recent Star purchase of the Wadell automotive division.

Designed principally for truck and bus shops, this high precision double spindle lathe reportedly saves considerable time in relining, and assures a 100 percent contact of lining to drums. It also reduces frequency of brake adjustments. *Star Machine & Tool Co., 201 Sixth Street, S. E. Minneapolis, Minn.*

Direct drive air-shift . . .

. . . is available for all Spicer torque converters. The new air shift kit was developed to simplify the control and maintenance on Spicer direct drive units.

Installation of the shift permits the shift in or out of direct drive to be controlled through one solenoid air valve assembly only. This eliminates the direct drive poppets and critical direct drive fork shimming procedures, which in turn eliminates the direct drive poppets switch box and converter wiring harness as-

Continued on page 94

$6.68 a week

PUTS A SET LIKE THIS ON YOUR WORKBENCH

5164-GS-B
164-pc tool set
$32.35 down
only $6.68 a week

NOW...

every mechanic can own *Snap-on Tools* with Snap-on's new pay-as-you-earn plan

ATTENTION SHOP OWNERS AND SERVICE MANAGERS

Be sure to pass this advertisement to your mechanics — and remember, the *Snap-on* Credit Plan also applies to the latest in profit-building shop equipment.

VR-300
valve refacer
$45.00 down
only $9.45
a week

Yes, it's a fact, men — you can be earning more money today with the *Snap-on* tools you pay for tomorrow.

TEN PERCENT DOWN puts any *Snap-on* tools to work for you. That's all it takes to start using the world's finest tools and shop equipment.

LOW MONTHLY PAYMENTS fit into most everyone's budget . . . make it easy and convenient to own *Snap-on* tools. It costs only a few dollars a month to own some sets.

UP TO 20 MONTHS TO PAY THE BALANCE, keeps payments low. The *Snap-on* Credit Plan offers a choice of payment periods — 6, 9, 12, 15, 18 or 20 months. Under terms like these, every *Snap-on* tool is within reach of all mechanics and shop owners.

It will pay you to investigate how easy it is to own and use *Snap-on* tools. The *Snap-on* man who calls at your shop can give you the simple details in a few minutes. Ask him about it.

*Snap-on is the trademark of Snap-on Tools Corporation.

SNAP-ON TOOLS CORPORATION
8040-E 28th Avenue • Kenosha, Wisconsin

BUCK-CYCLONE CLEANER

PATENTED

A SUPERINTENDENT OF EQUIPMENT of a large Transit Bus Company operates 3 "Buck Cyclone Cleaners", the first four years ago. He told us on *April 13, 1956:*

1. **We are well pleased. It does a better job of inside bus cleaning and more cheaply than can be done by hand.**
2. **The "Cyclone" is equipped with two 5 H.P. electric motors. The only additional cost is the supplying of compressed air to the air hose for stirring up the dust inside of the coach.**
3. **It takes on the average, 3 minutes to clean a 40 or 50 passenger bus.**
4. **The Ross and White Company can supply a galvanized steel trash house with a "Cyclone", and you cannot build one any cheaper.**
5. **I can only say that you cannot possibly clean or sweep a bus by hand as clean as this machine will do it or as cheaply.**

95 OTHER TRANSIT COMPANIES are generally having the same satisfactory results.

PRICE UPON REQUEST

●

MADE EXCLUSIVELY BY US

ROSS AND WHITE COMPANY.

CHICAGO DAILY NEWS BUILDING, CHICAGO 6, ILLINOIS

WHAT'S NEW

Continued from page 92

sociated with it. The throttle dip and clutch solenoid air valve units are no longer used, thereby effecting a greater saving in maintenance trouble and cost, it is said.

Electrical circuits consist of a hot wire to the direct drive solenoid air valve, while the other terminal is grounded at two different points. To shift into forward and reverse, the solenoid is grounded at the forward and reverse tower, which moves the direct drive to the balk position, dips the throttle and releases the clutch. For additional information write *Baker Manufacturing Co., Marine City, Mich.*

New compact sweeper . . .

. . . designed for areas where larger sweeper cannot be used is announced.

Known as Model 50, the sweeper is 60 in. long, without sidebrush, and turns in approximately its own length. Traveling at speeds of two to eight mph, it cleans a 28 in. path and is said to sweep up to 80,000 sq ft an hour.

Extra-clean sweeping is said to result from a combined brush-plus vacuum system utilizing high volume airflow. A 28 in. main brush, revolving in a vacuum-equipped compartment, hurls dirt and litter forward into a removable dirt hopper. At the same time, a high volume 11 in. fan draws dust and fine dirt from brush compartment up into a fabric bag. *G. H. Tennant Co., Minneapolis, Minn.*

A new patent has been issued . . .

. . . covering a fluid pressure diaphragm securing assembly on a reduced diameter air brake chamber.

The patent points out a number of features of these brake chambers which were designed specifically to be "highly effective in operation" while requiring a minimum of space

Continued on page 101

Our most important job . . .

Keeping your customers satisfied!

Comfortable travelers are satisfied travelers . . . and that's *our* job. It's been our job for quite a few years now. If you've shopped around, you've already discovered that you can't find more dependable motor coach air conditioning equipment than Tropic-Aire—Carrier. Road-proven . . . by *billions* of passenger miles. Versatile . . . five basic designs to fit nearly any coach make or model.

Your choice . . . either gasoline or diesel power. And as for cost . . . no matter how small your fleet, it can be equipped with Tropic-Aire—Carrier air conditioning equipment for far less than you think.

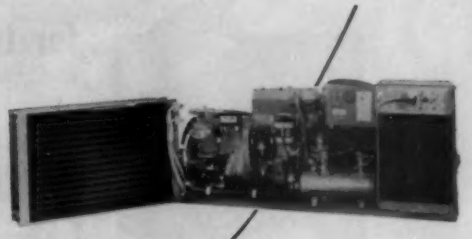
Think it over . . . then let Tropic-Aire—Carrier help keep *your* customers satisfied!

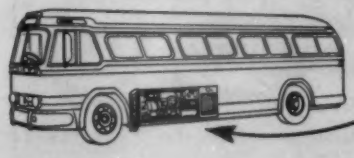
Carrier

TROPIC-AIRE

TROPIC-AIRE, INC., 5201 W. 65th Street, Chicago 38, Illinois

Tropic-Aire, Inc. is a subsidiary of McGraw Electric Co.





Could This Be the Answer to the Auto?

Le Tourneau's "Sno-Freighter" is the latest design for operation across the frozen Arctic wilderness. But for bus operators facing automobile tie-ups, a bus built along the same lines would be of immense value. One can just imagine one of these behemoths straddling an ordinary auto, ending the traffic problem. Actually, the vehicle is built in six sections . . . is 274 feet long . . . has a capacity of 150 tons. The deck is more than eight feet off the ground and a man can walk under it in upright position.

more miles per dollar!

Bendix*

ELECTRIC FUEL PUMP

for trucks, buses and passenger cars

Learn more about this new and improved fuel pump.

Write for descriptive folder and specifications.

WRITE DEPARTMENT A

*REG. U. S. PAT. OFF.

ECLIPSE MACHINE DIVISION ELMIRA N. Y. Bendix AVIATION CORPORATION

ATA Convention

Continued from page 54

tail lights and similar features. A wraparound windshield. Quieter operation. More comfortable seats. Reduction in engine fumes. Easier loading and fare collecting. Lighter weight.

A proposed plan for securing new funds for mass transit facilities was cited by California State Senator John F. McCarthy. State gas tax money, now restricted to highway use, should be made available for rapid transit right-of-way costs, he said. Although the proposal was killed at the last session of the state legislature, McCarthy has hopes for its success at the next session. In line with his belief in coordinated highway and transit planning, he advocated purchase of right-of-way for rapid transit and highways by a single agency.

B. W. Booker of the California State Highway Department told the gathering he advocates rail transit on state right-of-way—in combination with freeways, for instance—only if it does not interfere with the job of carrying vehicular traffic. Use of state right-of-way for rail transit would require additional legislation, he believes. The legislature has okayed construction of bus loading facilities on freeways with state funds, he noted.

If diversion of highway funds for transit interferes with meeting the needs of vehicular traffic it would be "robbing Peter to pay Paul," he declared.

Booker said each form of transportation should be developed to the extent that it can contribute to solution of transportation problems. Existing streets must be developed to the fullest, using signals, channelization, street widening, better transit equipment, and good enforcement of regulations.

As an example of effective development he cited the 40-mile freeway system planned for San Francisco. It will carry half the traffic load now carried by 800 miles of streets.

Commissioner Ray E. Untereiner of the California PUC, another speaker, recommended additional aids for transit, such as reservation of the curb lanes for transit and a ban on right turns on major arteries.

An example of the regional approach to transit problems was outlined by Harry M. Moses of Parsons, Brinkerhoff, Hall & MacDonald, New York engineering firm. He described the proposed $1.8 billion rapid transit plan for the nine-county San Fran-

cisco Bay Area—a plan that stemmed from a study for which he was project engineer.

Presiding over the two general sessions of the conference were Charles D. Miller, general manager of San Francisco Municipal Railway, and George R. Troutwine, general manager of the Sacramento Transit Authority.

Victor C. Peterson, superintendent of equipment for San Francisco Municipal Railway, acted as general conference chairman.

Some 225 delegates attended the conference, making it one of the best-attended of the Pacific regional ATA meets.

Portland made a successful bid for next years conference.

An important part of the San Francisco conclave were division conferences, headed by the following general chairmen:

Vernon W. Anderson, San Francisco Municipal Railway, operations-schedule-traffic; Donald Mazzoni, San Francisco Muni, claims and safety; Howard D. Beebe, Key System Transit Lines, Oakland, accounting purchases-stores; John C. Painter, San Francisco public utilities engineering bureau, electrical-plant-engineering; R. W. Anderson, Metropolitan Coach Lines, Los Angeles, maintenance, and Virgil Elliott, director of the San Francisco Public Utilities Commission's bureau of public service, public relations.

Highlights of the division meetings were . . .

Operations • George Goehler, Los Angeles Transit Lines, spoke on IBM methods of scheduling, describing how passenger load data are fed into machines to determine headway frequency. So much interest was evidenced that a second session was held entirely on this subject.

Members of the traffic group heard a discussion of San Francisco's coordinated approach to traffic planning. Representatives of the police, public works and city planning departments and the Municipal Railway confer monthly on methods of speeding traffic and transit. This cooperation at the staff level allows conflicts to be resolved in the planning stage, and covers such subjects as one-way streets, towaway zones, bus stop locations, controlled turning movements and similar measures.

Public Relations • Between .5 and .75 per cent of gross revenue is the common percentage allocated for advertising, public relations men learned when they exchanged information on

Continued on next page

New Amazing Oakite

RUSTRIPPER

reconditions radiators

in less time —with less work

There's just nothing like Oakite Rustripper for cleaning radiators.

Prove it for yourself. Take a radiator so choked up with rust and sludge that there's no circulation at all. Give it a hot bath and reverse flush in Oakite Rustripper. You'll be surprised how quickly that core is opened—ready to work like a new unit.

And Oakite Rustripper gives you these extra advantages:

- **Speeds up soldering jobs**
- **Solution is long-lasting**
- **Easy-rinsing, no residue**

Oakite Rustripper is doubly useful around the shop as a remarkable paint-stripper, too. Ask your local Oakite Technical Service Representative to demonstrate, or write to Oakite Products, Inc., 16C Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

PROTECT REVENUE with Allocated* METAL FARE TOKENS

Ideal for multi-fare and fractional fare systems. Attract riders. Speed fare handling. Eliminate change-making delays. Assure accurate sorting, counting and wrapping by maintenance of identical size. An investment . . . not an expense, for they wear indefinitely.

* Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. Perforations and lettering are in the same relative aligned position on every token which makes them identical, thus protecting against duplication. This is especially important with no Federal law protection.

Established 1854

TRANSPORTATION DIVISION

MEYER & WENTHE, Inc.

30 S. Jefferson St., Chicago 6, Ill.

EVERY KIND UNIFORMS FOR EVERY NEED

Every Uniform Custom-Tailored Custom-Fitted to Every Individual Size

Maier-Lavaty Uniforms are made for the individual man, *in our own shops.* Not ready made and fitted "off the shelf."

For an investment in good appearance—and for the best lasting impression—choose Maier-Lavaty Uniforms.

STYLE BOOK AND SAMPLES ON REQUEST

Originators and designers of uniforms for . . .

Greyhound
City Lines of W. Virginia
Consolidated Bus Lines
Blue Ridge Transportation
National Trailways
and many other operations

Maier-Lavaty COMPANY UNIFORMS

315 S. Peoria St., Dept. BT-5, Chicago 7, Ill.

ATA Convention

Continued from page 97

their advertising programs. Most operations try to include community newspapers as well as big city dailies in their advertising budgets.

Television is getting increasing use as a medium for transit ads, and effective use of radio was also discussed. Several operations schedule spot radio commercials of the "It's work to drive" type for the rush hour, so they will be heard by autoists in a receptive mood.

Publicity men were enthusiastic about promotion gimmicks, such as a free bus to publicize new routes or equipment. Seattle Transit auctioned off some obsolete buses through a local disk jockey—a scheme that gained wide publicity and conveyed the reminder that the Seattle fleet was being modernized.

Maintenance • At a session on brake maintenance, evidence was presented that equalization of braking effort on front and rear axles pays off in increased brake and tire life. George H. Powell, superintendent of equipment for Los Angeles Transit, presented a strong argument: balanced brakes are an important factor, he said, in boosting tire lining life over a five-six year period from 75,000 to 90,000 miles on front tires, and from 25,000 to 55,000 miles on rear tires.

Mileage on drums is as high as 300,000 miles, and brake lining life has been lengthened from 8,000 to 50,000 miles. The LATL program includes installation of front drums one inch wider than shoes for additional metal to dissipate heat, and removal of the forward wheel housing shield on rear wheels for better cooling.

At a meeting on overhaul, Earl Richardson, Rose City Transit, Portland, predicted that tune-up and minor repairs will become more important than the overhaul period as careful inspection lowers the frequency of needed overhauls

Members were cautioned by Los Angeles delegates to prepare for anti-smog campaigns in their cities. Be ready to suggest tests that are reliable for vehicle exhaust in order to avoid regulations based on tests designed for factory stacks, they were warned.

Accounting - purchases - stores • New uses for IBM equipment were described by E. H. Uecker, auditor of Metropolitan Coach Lines, Los Angeles. He pointed out that IBM should be used in as many operations as possible to justify rental cost. In addition to payroll, fare audit, and stores, IBM methods can be used in keeping maintenance and fuel records. The experience common to many of those present was that additional tasks could be shifted to IBM without increasing equipment or personnel because operators gained in speed as they become more familiar with the system.

Claims and safety • Ways to avoid their most expensive accidents—on board falls—were discussed by claims agents. Coaches should carry two types of signs: those cautioning drivers against sudden stops and those that ask passengers to hold on because sudden stops are sometimes unavoidable.

Engineering improvements—automatic shift, for instance have reduced sudden starts that once was a major cause of accidents, they noted.

CTS Starts Workers' Flyer

• Cleveland Transit System has started its own version of Cincinnati's club flyer plan. But instead of being geared to the executive, the CTS service is going after the bread-and-butter worker.

With the cooperation of a Cleveland industrial plant, CTS will operate three special routes between those areas in which a number of employees live and the company's plant.

A premium fare will be charged, amounting on short runs to the regular local fare plus five cents. On longer trips, CTS will collect express fares and the additional five cents. However, the routes are so designed that they will operate non-stop for part of the way.

Cooperation of the plan itself was of utmost importance, since news of the new service was spread through posters, conferences and bulletin board announcements.

Until now most of CTS's efforts along these lines have been on the order of feelers. This marks the first really concerted effort on the part of the company and an industrial plant.

CTS's program of wooing new riders in industrial plants is long range. The first major step in the program was first outlined in BUS TRANSPORTATION in May, 1955.

Trolley Buses for Brazil

• Marmon-Herrington Co. has entered into a licensing agreement under which M-H trolley buses will be made in Brazil by Troleibus Villares, S.A., of Sao Paulo, a newly established company.

The firm represents the efforts of two other companies, one the licensee

of Westinghouse Electric Co., and the other, a leading body builder.

It is expected that initial deliveries can be made in about one year.

Rose City Wins Extension

• The request of the Rose City Transit Co. for a 30-day extension of its existing operating permit has been granted by members of the Portland, Ore., City Council. Rose City Transit had been operating under a temporary permit issued for 60 days after it took over from the Portland Traction Co.

Although for a short while Rose City was operating with no permit at all, council members pointed out that there was nothing unusual. Portland Traction, which operates interurban rail lines, has been operating under "sufferance" — without franchise or permit—since 1927.

Riding Costs May Go up

• Twenty-two cents may be the going price for a ride on transit buses in Hammond, Ind., if the board of public works there approves the application of the Chicago and Calumet District Transit Co.

Although the company reported a $13,000 profit last year, it stands to lose about $140,000 this year without a fare adjustment, company officials said.

Current fare rates are 20 cents cash or two rides for 35 cents. Children now pay ten cents or ten rides for 75 cents. The transit firm is seeking to eliminate the cut rate.

Bus Passengers Go Up, Down

• An annual survey of Milwaukee's buying and living habits shows that 30.4 per cent of the city's families use public transportation to get to downtown shopping areas, a jump from 28.9 per cent in 1955.

On the dark side, wage earners using buses to get to offices have dropped to 21.3 per cent as compared to last years 22.4 per cent. These figures are attributed to the fact that more shoppers are finding it too inconvenient to park the family car downtown, while factories are providing adequate space for their employees cars.

Scofield Bus Line Sold

• The Scofield Bus Line of Missouri has been sold to G. W. Conner of Springfield by Chester Baxter who purchased the line from Mrs. F. Scofield last September.

Conner was previously affiliated with American Continental Bus Lines.

ROCKWELL

ELECTRIC FARE REGISTERS

Measure your revenue ... Protect your Profits

A TYPE TO FIT ANY AUDITING SYSTEM

Made in two models—the locked vault type (shown) and the type which returns coins to driver after registration. Both machines total pennies, nickels, dimes and quarters on a single cash counter. Two sizes of tokens register in units on separate counters. Newly designed, wide angle inspection area provides utmost visibility. Mutilated coins and foreign objects are automatically trapped and rejected. Precision made, fully guaranteed. *Write for literature.*

Manufactured by

ROCKWELL MANUFACTURING COMPANY

Register Division Pittsburgh 8, Pa.

Nationally Distributed by

John D. McGulgan

616 So. Michigan Ave. Chicago 5, Ill.

WHEN YOU NEED THEM

JUNIOR DRAFTSMAN

SECRETARY

JUNIOR ACCOUNTANT

CASHIER

SALES REPRESENTATIVE

ENGINEER

ELECTRICIAN

JUNIOR BUYER

MACHINIST

...WILL THEY BE READY?

What kind of seniors will you hire this year from the high schools around you? Fast learners, steady workers, or...? Good schools are vital. And good schools *don't just happen*. If your company can help community groups to get better schools (population growth alone demands an extra 200,000 classrooms and 165,000 more teachers *right now*), the schools are sure to help your company. Think about it, won't you?

PUBLIC SERVICE ADVERTISING COUNCIL

Want to find out how to help in *your* community?
Get specific information by writing:
Better Schools, 9 East 40th Street, New York, N. Y.

WHAT'S NEW

Continued from page 94

for installation on vehicles. It refers to a novel construction for securing plates and diaphragm together which avoids the use of holes in the periphery of the diaphragm for reception of the customary clamping screws.

It states that another object of the invention resides in the use of a novel clamping band or strap which may be quickly assembled with the dished plates and diaphragm to securely hold these parts in position. *Bendix Westinghouse Automotive Air Brake Company, Elyria, Ohio.*

Maneuverable fire trucks...

. . . have been designed to carry a wide assortment of fire fighting equipment. The KB 8 model, one of six models available, features a 300 lb unit.

Other units utilizing dry chemical carbon dioxide combinations, water fog-carbon dioxide combinations or solely water are available depending on the types of hazards. These units are offered on either a three-wheeled 42-in. wide chassis, suitable for in-plant use, or a four-wheeled 48-in. wide chassis for indoor-outdoor use.

Accessories available on the units include ladders, utility bar, light, hose, portable fire extinguishers and extra nozzles, all mounted with panic proof quick release brackets. *Ansul Chemical Co., Marinette, Wisc.*

Stainless steel ticket booth . . .

. . . featuring a new compact "Travel-Lav" package lavatory is announced.

The new booth is said never to rust or corrode, and never has to be painted. Overall dimensions of the unit are four ft. wide, nine ft. nine in. long, and seven ft. 7½ in. high. A sliding curtain door divides the ticket compartment from the lavatory section.

The ticket compartment includes a built-in desk and drawers for tickets, change trays, office supplies, etc. Overhead lighting is provided.

The booth comes complete with all necessary wiring for lighting, telephone and burglar warning system. *Angelo Colonna, Westmoreland and Boudinot Sts., Philadelphia, Pa.*

Testing device . . .

. . . . for detecting a faulty spark plug is now available.

Called "Live Wire" it can also detect defective wires or a non-functioning cylinder in a matter of seconds. This spark plug and wire tester, over 31 in. long, has a high quality, sturdy steel "slim-point needle 1 in. long for speed and ease in contacting plugs.

The needle is held firmly in a rigid non-breakable insulated handle attached to 7 mm. high tension wire ending in a positive ground clip fastener. *H. C. Sweet Co., 12345 Telegraph Rd., Detroit, Mich.*

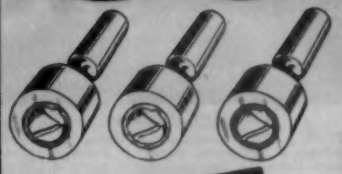
New Teflon hose line . . .

. . . with detachable, reusable fitting is now being produced.

Features of the new "666" hose assembly include the following: an ability to withstand extreme temperatures, from minus 100 deg F. up to 500 deg F., and an imperviousness to acids and many other fluids not transportable by synthetic or natural rubber hose.

The hose can be attached and detached by hand without the use of special tools. *Aeroquip Corp., Jackson, Mich.*

SACO TRADE MARK REGISTERED CAM FOLLOWER PRECISION ROLLER and PIN ASS'Y.
for GM Model "71" DIESELS



Your Fleet Sale Price SAVES YOU 25% to 40%

THE ULTIMATE IN PRECISION!

The SACO cam follower Roller & Pin Assy. which replaces GM Part No. 5190348 is held dimensionally within tenths of thousandths; machined from bearing steel; ground to a mirror-micro finish; hard — very hard — to Rockwell C Scale 64; concentric within one thousandth. Money cannot buy a better part functionally; one which lasts as long nor one so beautiful. Yet, SACO Roller & Pin Assys. save you 25 to 40%.

SACO ENGINEERING
2637 COTTAGE GROVE AVE., CHICAGO 16, ILL.

EVERY 2 WEEKS,* USERS OF OTHER FARE BOXES SWITCH TO *Grants!*

*Average over a period of years

WOULD YOU LIKE TO KNOW THE REASON? WRITE, WIRE OR PHONE TODAY

THE TRANSIT INDUSTRY CONTINUES TO BUY MORE *Grant* FARE BOXES THAN ALL OTHER MAKES COMBINED — BY A BIG MARGIN!

Grant MONEY-METERS CO.
1117 Douglas Ave., Providence 4, R.I., U.S.A.

WIRE, PHONE OR WRITE FOR FACTS ON:
Registering Machines
Lock Box Machines
Registering-Lock Box Machines
Ticket-Coin Machines
Registering-Ticket Machines

WHERE TO BUY

Traveling BILLBOARDS
Bring New Revenue... Better Results

CASH IN *now* on these "JUMBO" Change-Ad Carriers

Masonite AD-PANELS are changed in a jiffy. All sizes. Write for literature, prices. FREE Picture Album sent on request. No obligation.

THE YARDER MFG. CO. 718 Phillips Avenue TOLEDO 12, OHIO

BUS AGENTS
U.S.A.—CANADA—ALASKA
MEXICO
SCHEDULE INFORMATION CORRECTED MONTHLY
Russell's Official National Motor Coach Guide
$12.50 per year, 12 issues—
Published by
RUSSELL'S GUIDES, INC.
Cedar Rapids, Iowa

Scientific
FARE COLLECTION
Ideal for Buses and Street Cars
PEREY SUPERSTILES
- RELIEVES OPERATORS
- COLLECTS MORE FARES
- SPEEDS UP SCHEDULES

PEREY TURNSTILES
Write for Information
PEREY TURNSTILE COMPANY
101 Park Ave., New York 17, N. Y.

BUS SEATS
Complete line of recliner seats
- CITY SERVICE
- METROPOLITAN
- SCHOOL BUS SEATS

All other types made to your specifications
ALL WORK GUARANTEED
For full details & prices call or write
AMERICAN WICKER WORKS
H. A. Gass
1316-B Harmon Pl., Minneapolis 3, Minn.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
$1.20 a line, minimum 3 lines. To figure advance payments, count 5 average words as a line.
POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.20 a line an insertion.

INFORMATION:
BOX NUMBERS count as one additional line in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance of four consecutive insertions of undisplayed ads.
EQUIPMENT WANTED OR FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate is $9.50 per inch for all Business Opportunities & Equipment advertising appearing on other than a contract basis. Employment Opportunity advertising rate is $12.50 per inch.
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WANTED TO PURCHASE
PD 3704 Coaches, with Silver Sides and Air Conditioning, or PD 4102 Coaches.
SOUTHEASTERN MOTOR LINES, INC.
Carrollton, Georgia
Phone Terrace 2-2417

WANT TO BUY
TGH 3101-3102 GMC BUSES AND 37-41 PASSENGER CHARTER COACHES
OTTUMWA TRANSIT LINES, INC.
321 East 2nd Street, Ottumwa, Iowa
CALL MURRAY 2-9782

WANTED
Two 1952, 48 or 54 pass. school buses; one 29 to 37 pass. Flxible. Will sell or trade three 1945, 48 pass. Ford school buses, presently inspected.
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WANTED
DETROIT DIESEL NEW OR USED GM-110 FUEL INJECTORS AND PARTS. Complete Units Up to $50.00.
BRUCE W. MAYER
2090 East 19th St., Cleveland 15, Ohio

WANTED—DISCARDED
GM71 Old Style & HV Series Injector Parts. Top Money Paid.
Cassidy, 7120 Carnegie Avenue
Cleveland 3, Ohio

WANTED
C-37 Gasoline Hydraulic (Torque Converter)
MACK BUSSES
Must have entrance and center exit doors plus side emergency door.
W-1621 BUS TRANSPORTATION
330 W. 42nd St., New York 36, N. Y.

SCHOOL BUSES
We Have On Hand At All Times A Large Selection Of New & Used Buses For Immediate Delivery. All Guaranteed.
WOLFINGTON BODY CO. INC.
58th & Lansdowne Ave., Phila. 31, Pa.
GReenwood 7-6225

The largest selection of used
SCHOOL BUSES
IN WESTERN NEW YORK
Let us know your need.
HObart 3000; day or night
BUFFALO 24, NEW YORK
COTTRELL BUS SERVICE, INC.

1—PD4104 delivered 7-1-54, $27,500
2—PD4104 delivered 4-1-55, $30,336
3—PG3702, $2,000 each
1—PG3301, $1,750
All equipment in daily use and air cond.
Above prices without tires.
Missouri, Kansas & Oklahoma Coach Lines
Cincinnati at Fourth Tulsa 3, Oklahoma

FOR SALE
One 1944 Aerocoach, 37 passenger recliner also one 1946 Aerocoach, 37-passenger recliner.
HAMILTON MOTOR COACHES
207 Boulevard, Florence, New Jersey
Telephone Florence 7-0287

BUS LINE FOR SALE
Can purchase 35 buses, any and all parts, machinery, tools and equipment, furniture and fixtures.
Peoples Transport Corp.
Muskegon, Michigan

REPLIES (Box No.):
Address to office nearest you
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CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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POSITION WANTED

Transit Executive. Eleven years top management, administration, public relations, purchasing, maintenance, labor negotiation, commission hearing experience transit and interstate. PW-1180, Bus Transportation.

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BOX NUMBER
When answering the classified advertisements in this magazine, don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

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Rotary Process Hard Chrome—Magnafluxing—Electric Heat Treating. Serving National Railroads, Bus and Truck Companies, including Diesel Equipped.

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NEW INTERIORS THAT PLEASE THE FARE

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Bauco Replacement Seat Covers bring profits two ways . . . more attractive to the riders . . . lower maintenance costs for you. Regardless of the transportation fabric you choose, whether your seats are tack or snap on or zipper . . . Bauco covers will fit better, look better, wear better.

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We'll be grateful for an opportunity to talk to you. Just call, write or wire for information or estimates.

BAUCO **BERGEN AUTO UPHOLSTERY CO.**
26 GLEN RD., RUTHERFORD, N. J.

SAVE
RECONDITIONED PARTS

PLUNGER AND BUSHING ASSEMBLY

Pieces	Cost of Reclaiming	Cost of New Replacemnt	Saving for 12 Months
119	$654.00	$1,596.00	$942.00

Write for Catalogue

HANCOCK
DIESEL SERVICE CO.
361 Walnut St. Findlay, Ohio

NATIONAL COACH BODY REPAIR, Inc.

FROM LOSS TO PROFIT

Why tie up your wrecked coaches for months? Let us take your worry off your mind. We quickly give you skilled repair of accident damage. All work by factory trained men. No job is too big or too small. We will send references on request.

We also install or remove exit doors on coaches. We will send a wrecker anywhere in the U.S.A.

3121 W. Huron, Pontiac, Michigan
Mgr. J. W. Kuklinski
Phone Pontiac, Bus: FE 4-7943 Res: FE 2-7448

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Cranks Repaired . . . Completely rebuilt . . . Pressure & Magnetic Testing . . . Fageol . . . G.M.C. . . . International . . . Gas & Diesel . . . L-450-Int. Cyl. Heads converted to R-models. For free information write

CHAPIN CYLINDER HEAD COMPANY
Phone No. 3 Chapin, Ill.

FOR SALE
471—GM Diesel Engines—Used
Complete with Spicer Model 91 Hydraulic (illustrated), or Spicer 4 Speed Mechanical Angle Drive Transmissions, 12 Volt Starters and Generators, Air Compressors. Also, Complete Engines, Less Clutches and Transmissions.

NATIONAL TRUCKING CO., INC.
72 Roanoke Ave., Newark 5, N. J.

BE READY!
ORDER SCHOOL BUSES NOW

We have on hand

4—1956 International 60 Pass.
3—1956 Chevrolet 54 Pass.
6—1956 Ford 60 Pass.

Ready Now

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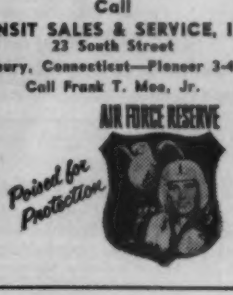
Call Frank T. Mee, Jr.



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Greyhound 41 pass. PDG Cruisers, Silversides
1947 G.M.C. TDH 4507 Transits
1949 Fixible 33 and 37 pass.
1950-52 TDH 4509 Transits and Suburbans
1947 Becks, 37 passenger, Full Silversides
1946 G.M.C. TDH 4007 Transits
1949 G.M.C. Transits, TDH 3610 One-Door
PD 4101-2-3-4 G.M.C. Diesel Cruisers
1948 Dodge School Bus, 42 pass.
1946 G.M.C. Transits TDM 3606
GMC TDH 3610 Also TDH 3612 Transits
1952 G.M.C. TDH 5107 Suburbans

FS1697 BUS TRANSPORTATION
330 West 42nd Street, New York 36, N. Y.

USED BUSES

1—1952 61 passenger, Superior Pusher
1—1953 Ford Superior 48 pass.
3—Superior Pushers, 1—47 pass., 2—53 pass.
3—Ford Superior body, 1—43 pass., 2—48 pass.
1—White Penn Yan body, 53 passenger.
1—Mack Penn Yan body, 40 passenger.
Two Buick powered Fixibles, 25 & 29 pass.
One rod diamond Aerocoach, 35 pass.

GENESEE BUS LINES, 597 Main St., East Aurora, N. Y., Phone 500

FOR SALE

Aerocoaches and G.M.C. Coaches

5—Aerocoaches, 37 passenger, 1944 to 1946, $1,500.00 and up, including tires.

5—743 G.M.C. coaches with diesel and gas motors.

All buses now being used in chartered service and can be seen at the address below.

G.M.C. model 743 parts including rears and transmissions. Axles, transmissions, rears and many other parts for Fixibles. Also, aerocoach parts.

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619 West Biddle St., VErnon 7-5666
Baltimore 1, Maryland

COMPLETE STOCK OF SPARE PARTS FOR
GMC PDA 2903
GMC PD 3702-3
AEROCOACH
FOR SALE AT SUBSTANTIAL DISCOUNTS
WRITE
Virginia Stage Lines, Central Purchasing Department
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GRANT ELECTROFARER FARE BOXES

2 yrs. old
Excellent Condition

FS1230 Bus Transportation
330 W. 42nd St., New York 36, N. Y.

For Sale—GMC Buses

19—TDH-4507—1947-45 passenger
4—TDA-3703—1947-37 passenger
6—PDG-4101—1941-41 passenger

BUY **USED BUSES** SELL

RHODES BUS & EQUIPMENT CO. INC.

1475 BROADWAY NEW YORK 36, N. Y.
Phones BRyant 9-2584, 2585

PRICED TO SELL

8—1948 Transits, 31 Passengers, Continental Motors. $12,000 worth of parts for these coaches.
1—1949 Aero Coach, 36 Passenger, Transit Type. Low Mileage.
1—1948 G. M. C. Diesel 3610 (Rear exit door removed extra seat added) 38 Passenger, Transit Type.
1—1944 P. G. A., 37 Passenger, Motor completely overhauled, reclining seats.
1—1948 Ford, 29 Passenger, Transit Type.
3—1946 Ford Transits, 29 Passenger.

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33—Johnson J. Electric Fare Boxes with stands, in excellent condition, plus spare parts.

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14—IC-41 ACF 37 Pass. Recliners—Air Conditioned
6—IC-41 ACF 37 Pass. Recliners
2—PDA 3702 GMC Diesel 37 Pass. Recliners
2—P-37 Aerocoach 37 Pass. Recliners

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1951 Cityliner, 33 pass. side exit. 42,000 actual miles, brand new tires included. JXLD Motor, like new inside and out. Used as a spare and for some charter work.

1949 Cityliner, 33 pass. side exit. 175,000 miles on coach. New Hercules JXLD motor at 145,000 miles. Tires 75% new included. Excellent shape.

Also 1947 and 1945 Cityliners, good shape. 1948 Duraliner, 32 pass. silversided. Good tires.

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Ralston, Nebraska

1955 CHEVROLET STAGEWAY
12 PASSENGER, AIR PORTER
Low Mileage—Heavy Duty Equipment
2 Heaters—Booster Brakes
Painted Blue and White
SAVE $1000—PRICE $3495.00

1949 CHEVROLET, 12 PASSENGER
Completely Rebuilt and Reupholstered
8 Doors—Top Condition
PRICE $995.00

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QUEEN CITY CHEVROLET
CINCINNATI, OHIO PA 1-4880

FOR SALE

35 Used Ohmer Fare Registers and Electric Counters, All in Good Working Condition—$35.00 per Unit.

USED BUSES

Make	Model	Seat. Cap.	Price Ea.
2—1945 KW	612	40	$ 700.00
4—1942 KW	600	40	600.00
3—1947 GMC	TDH 3610	40	4500.00 Less Tires
1—1948 GMC	TDH 3207	40	5000.00 Less Tires
1—1949 REO	40-CA	40	3500.00 Less Tires
4—1950 GMC	TDH 3612	36	5000.00 Less Tires
2—1950 FLXIBLE	218-B1-50	33	5000.00 Less Tires
2—1951 FLXIBLE	218-FB-51	33	5500.00 Less Tires

TACOMA SUBURBAN LINES, INC.
801 Pacific Ave., Tacoma 2, Washington

1—1946 Flxible Bus 25 passenger, Powered with a 261 Chevrolet motor. Good rubber used on a regular — Ready to go — only $2650.00.

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Norfolk, Nebr.

FOR SALE

4—4101 GMC Diesels—Air Conditioned
3—IC-41 ACF's—Air Conditioned
4 good 29 passenger Buick Flxibles
15 good 36 passenger Fitzjohn Falcons with GK 140 Waukesha Motors
15 good 28 passenger 510 Fitzjohns
7 good 28 passenger 500 Fitzjohns
Will sell cheap in lots of 4 or more

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Spartanburg, South Carolina
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Ford buses in good condition $500.00 up. Ford parts for engines, bodies, transmissions and rear axle. Ford engines—6 & 8 cylinder.

WANTED—GMC Diesel Buses
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750 Somerset St., New Brunswick, N. J.

FOR SALE

2—1950 Flxible Visicoach. Model 218—29 Passenger, full reclining seats, $4000.00 Each.

M. F. Cowan
VALLEY BUS LINES
60 River Blvd.
Rochester, New York

FOR SALE:

3 - P. D. 3702: 477 gas engines, $1500.00 each, plus tires.
3 - P. D. 3702: 471 diesel, $2000.00 each, plus tires.
ALL COACHES ARE IN GOOD CONDITION

Central Swallow Coach Lines, Inc.
724 North Capitol Ave., Indianapolis 4, Ind.
Telephone: ME 4-5461

FARE BOXES

Five Johnson lock-type fare boxes with cabinets, good condition. $50 each.

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980 Bankhead Avenue, N. W.
Atlanta, Georgia

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2—1940 743 cruisers. 87 passengers, 671 engines (diesel). $2500.00 each, plus tires. Will give all spare parts to whoever buys two.
1—3703

WILSON BUS LINE, INC.
Central St. Ashburnham, Mass.

FOR SALE

Equipment in Excellent Condition
1951 TDM 4509 Suburban
1949 TDH 3612, 38 Pass.
2—1945 TGM 3609, 36 pass.
2—33 pass., White Sub., 782-10, 1946

DOWNTOWN BUS CO.
411 Summit Ave., Jersey City, N. J.

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Anything you want
that other readers of this paper can supply
OR—
Something you don't want
that other readers can use, advertise it in the
Searchlight Section

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Hotter Than Ever
4 New Models

12 Passenger Sedan Coach
9 Passenger Sedan Coach
12 Passenger Station Wagon
15 Passenger Carryall Suburban

"Finest Small Coaches Ever Built"

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National Distributors
6th and Sycamore Pa—1-4880
Cincinnati, Ohio Night, Myrtle 7-2604

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Purchase Your Next Buses From Us
Let Us Know Your Needs

McLaughlin Bus & Equipment Co.
1224 No. Main St., Providence 4, R.I.
MAnning 1-5852 PAwtucket 2-6493

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2-1947 Fixibles 25 pass. with aisle seats 248 GMC power. Very clean coaches and have about $3,000 worth of parts for them. Will give to purchaser of both coaches.

1-1950 Chevrolet stretch 11 pass. New engine, general coach condition is good.

1-1945 Aerocoach 37 pass. very clean and still under the 200,000 mile total coach miles.

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OTTUMWA, IOWA
Home—Murray 4-7464
Office—Phone Murray 4-8504

FOR SALE

Parts—Chains—Accessories
For Aerocoach—1945—Beck 1947
Fixible 1945—White Mod. 788
Price List on request

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172 Memorial Ave. W., Springfield, Mass.
Tel. RE 9-2551

5—1956 Inter, 60 Pass. School Buss
2—1949 Fixible, 37 pass.
3—Superior School Pushers, 61 pass.
2—1951 GMC., Inter. School Bus, 60 pass.
4—1952 12 Pass. Airporter Stretched Cars.

FS1213 Bus Transportation
330 West 42nd St., New York 36, N. Y.

FOR SALE

PEREY TURNSTILES
Takes dimes and 650 tokens. Excellent condition. Priced right for quick sale.

SUPERINTENDENT OF MAINTENANCE
Avenue B & East Broadway Transit Co., Inc.
235 Cherry Street Seekman 3-6060
New York 2, New York

G.M.C. Diesel Buses

Have three 37 pass. cruisers for sale. Two 1942 PDA 3701 will sell both complete with tires for $2450.00 also one 1945, model 3702, for $1850.00 with tires. 4 cyl. diesel motors.

FS1699 BUS TRANSPORTATION
330 West 42nd Street, New York 36, N. Y.

LATE MODEL *USED* BUSES..

GMC—PD 3703—4-cylinder Diesel—37 pass. Parlor Coach
GMC—PD 3702—4-cylinder Diesel—37 pass. Parlor Coach
PD 3701—6-cylinder Diesel—37 pass. Parlor Coach, fully silver sided

• The coaches listed above are all in excellent condition and equipped with new Tires.

PD 2903 GMC 4-cylinder Diesel—29 pass. Parlor Coach
P 45 & P 46 Aero Coaches with 477 Gas Engines—37 pass. Parlor Coach
TG 3609 GMC—477 Gas Engines Transit
IC 41 ACF Late Models—Hall-Scott Engines

• These coaches are all in good shape and equipped with used tires.

WE ALSO CARRY LARGE QUANTITIES OF USED PARTS

HAUSMAN BUS SALES, INC.

4921 South Damen Avenue, PRospect 6-0204, Chicago 9, Illinois

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LATE MODEL DIESELS

A REAL BARGAIN

3—GMC PD-4103 Parlor Coaches, 6-71 Diesel Engine, Priced $17,000.00 each.

10—Model 348 Twins, double door, Very Clean, $2,000.00 each.
20—ACF-Brill, 50,000 mi. like new, city transit, 2 doors.
20 1550 Mack Diesels, Model C-50, Transit Type, 50 Passenger.
1—PD-3703, 1947 GMC Diesel Parlor coach, Reclining seats, excellent condition, air conditioned.
15—1948 Beck Mainliners, 37 passenger parlor coach, reclining seats, int'l Diamond 450 engine.
10—1946 Fixible, Model 90, parlor coach, 29 passenger, excellent condition.
2—GMC TG-3708 Hydramatic, priced very reasonably, with tires.
2—GMC TG-3609 very clean, priced low, with tires.

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GEORGE P. KEENA
NORTH PARK HOTEL BLDG. 1936 NO. CLARK ST., CHICAGO 14, ILL., Phone: MOhawk 4-3200

FOR SALE

1952—Twin Coaches FL-40—52 pass.
1951—GMC TD 3612 Coaches
1951—Fixible-Intersity-Transit Type Seats
1951—GM-PD 4108
1951-52—GM-PD 4103—37 pass.
1949-50—GM-PD 4101—37 pass.
1952—GM-PD 4103—41 pass.—Air Cond.
1949-48—GM-PD—4101—41 pass.—Air Cond.
1948—GM-PD 3703—37 pass.—Air Cond.
1946—GM-PD 3702—37 pass.—Air Cond.
1946—GM-PD 3502—35 pass.
1946—GM-PD 2903—29 pass.
1945—GM-PD 748—37 pass.
1946—Fitzjohns—City Type

Please let us have your inquiries and offerings.

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7010 Empire State Bldg., N. Y. 1

FOR SALE

1948 model Buick Fixibles 33 passenger transit type seats, excellent condition

Price $3,600.00 each without tires.

Consolidated Trailways Bus Lines, Inc.
2004 Princeton Avenue, Bluefield, W. Va.

MARMON HERRINGTON BARGAINS

Two 27 pass. 8M8 coaches with new tires. In storage over 2 yrs. I will take the big loss. Both for the price of one. See these before you buy.

J. E. OSBORNE, Lewis, Wisc.

1952-51 GM PD 4103 41 pass. air cond.
1949 GM 4101 41 pass.
1951-50 Fixible 29 pass. Air cond.
1945 GM PD 3702 37 pass.
1948 GM PD 3704 37 pass. air cond.
1947-46 ACF 37 & 41 pass. air cond.
1951-48 Beck 37 pass.
1951-50-48-47-46 Aerocoaches, diesel, gas & air cond.
1947-46 Fitzjohn Duraliner 28 pass. & 30 pass.
1955 Fitzjohn Roadrunner 37 pass.
1948-47-46 Fixible 29 pass.

Let us know what you need and what you have to sell.

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Phone 283, Farmville, Va.

FOR SALE OR TRADE

2—Aerocoach 45—37 Pass.
1—Aerocoach 45—33 Pass.
1—Aerocoach 47—37 Pass.
All with reconditioned 450 Red Dia.
1—Fixible 47—29 Recliner, Buick Powered.
Will take cars, trucks or aircraft on trade.

S & S BUS SERVICE, INC.
R.D. No. 1, Rensselaer, N. Y.

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CHICAGO USED BUS MART
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Midway 3-9110

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Approved by Scientific Test . . .

YOUR BEST BUY!

Metcalf

BUS DRIVERS' UNIFORM FABRICS

Certified by
UNITED STATES
TESTING CO.

Metcalf Serges, Tropicals, Elastiques, and Twist Gabardines are the only bus drivers' uniform fabrics that are tested and certified by United States Testing Co., America's leading impartial scientific laboratory.

When you specify Metcalf, you know that your fabrics have been tested and approved for:

- **Color uniformity • All Wool Construction**
- **Durability • Strength**
- **Shrink Resistance to Dry Cleaning**
- **Resistance to Abrasion**
- **Color Fastness to Light, Perspiration, and Dry Cleaning**

Take this scientific approach to your fabric buying . . . and you can be sure you are getting the market's best buys!

METCALF BROS. & CO., INC.

1450 BROADWAY, NEW YORK 18, N. Y.

Write our Uniform Fabric Department for information and samples.

How Evanston Bus Company uses STANOLUBE HD-M Motor Oil and gets 325,000 miles between overhauls

One motor oil does the job for all equipment —gasoline and diesel

Evanston Bus Company operates 63 pieces of equipment over seven high traffic density routes. Routes total 27.4 miles yet these buses put in 135,000 miles per month operating 20½ hours a day. Rolling on this kind of schedule requires a PM program that is closely followed *and* a top quality motor oil. Evanston Bus uses STANOLUBE HD-M.

Bus operations are in a compact population area. All bus routes but one go into the heart of the shopping area and channel into a single thoroughfare. This means a lot of start and stop operation which places a heavy stress on the motor oil. STANOLUBE HD-M Motor Oil stands up to this service so well that engines average more than 325,000 miles between major overhauls.

You can get this kind of performance from STANOLUBE HD-M Motor Oil just as Evanston Bus Company does. Ask your Standard automotive lubrication specialist. There is one near you in any of the 15 Midwest and Rocky Mountain states. Or write, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Standard men are interested in top management's problems, work with management to get top economy of operation. B. J. Toale (left) chief automotive engineer for Standard's Chicago Division discusses equipment lubrication with Evanston Bus Company executive vice president and general manager Grant C. Bergsland. Barney Toale has been working with bus operators on lubrication problems for 18 years. He has completed Standard's Sales Engineering School.

One of Standard's most experienced automotive engineers on lubrication and technical service is Jim Phelps (left). Jim has more than 29 years service with Standard. Experience includes aviation as well as automotive. Jim and Evanston Bus garage foreman Henry Peterson get into the back of GM diesel in discussion of engine lubrication.

Tom Farrell of Standard (left) and Don Sterling, superintendent of equipment, get down to dip stick inspection in the shop at Evanston Bus. Tom Farrell has six years service as an automotive lubrication specialist with Standard. He has an engineering degree and has completed the Standard Sales Engineering School.

STANDARD

STANDARD OIL COMPANY
(Indiana)

Quick Facts About
STANOLUBE HD-M Motor Oil

1. STANOLUBE HD-M Motor Oil is refined from high quality, solvent extracted base stocks.
2. STANOLUBE HD-M contains specialized additives that prevent bearing corrosion, reduce piston varnish and keep rings free to seal against blow-by.
3. STANOLUBE HD-M contains still other additives that reduce wear of heavily stressed parts.